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NEWSPAPER

COMPUTERWORLD

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He's been called 'the most successful capitalist who ever lived.' This week in In Depth, an exclusive Computerworld *interview with Thomas J. Watson Jr., who rose from junior salesman to chairman of the board at IBM.*

Related Programs Also Bow

MVS Users Gain Relational DBMS

By Paul Giltin
CW Staff

WHITE PLAINS, N.Y. — IBM last week provided another incentive for large users to jump on the MVS/Extended Architecture bandwagon when it unveiled Database 2 (DB2), a relational data base management system for MVS/XA and MVS/370 architectures.

IBM also announced a set of related programs for DB2: the Query Management Facility, which allows DB2 files to be manipulated interactively using IBM's Structured Query Language and Query-By-Example; and Data Extract, which extracts files from IBM IMS/VS or DL/1 data bases and Vsam and sequential data sets for use with DB2 (story on Page 4).

DB2 was developed for large data bases (up to 64G bytes) and offers the row and column format of relational models. Data definition, retrieval, manipulation and control operations are supported by SQL, an English-like high-level language. SQL calls may additionally be placed within programs written in Cobol, Fortran, PL/1 and assembler language.

DB2 can also be accessed concurrently by MVS users through the IMS/VS data communications feature, CICS/OS/VS, TSO and in batch.

An IBM spokesman acknowledged that many similarities exist between DB2 and SQL/DS, which is IBM's relational DBMS for IBM DOS/VSE users. But DB2 is not simply "SQL built on top of MVS," according to Sam Kahn, advanced data base products manager at the Santa Teresa Laboratory in San Jose, Calif., who said DB2 deals with the more complex issues" facing MVS users.

The major differences between

(Continued on Page 4)

Analysis

DB2 Eases Move Into Relational

By Paul Gillin
And Lois Paul
CW Staff

With its announcement last week of a relational data base management system for MVS/Extended Architecture and MVS/370 systems, IBM has provided the means for easing users of its IMS and DL/1 DBMS into the relational realm, several consultants contacted by *Computerworld* last week observed.

Users will find switching from hierarchical data base systems to Database 2 (DB2) "like building an addition on your house and then another addition, and when you get through building additions, you realize that

(Continued on Page 4)

American Bell Reorganized, McGill Resigns AIS Post

By Bill Laberis
CW Staff

NEW YORK — Archie J. McGill resigned last week as president of American Bell, Inc.'s Advanced Information Systems amid speculation of a power play engineered within the AT&T hierarchy.

McGill's resignation came just one day after a major corporate reorganization that stripped American Bell of responsibility for AT&T's consumer telephone product development and marketing, transferring this responsibility to Western Electric Co., the manufacturing wing of AT&T. AIS is a division of American Bell that in the future will develop and market products designed for business users only.

Last week's American Bell reorganization in essence eliminated McGill's job, and he was subsequently offered another, reportedly far less important, role within the division.

(Continued on Page 6)

Photo by M. Gaffney

Archie J. McGill

Industry Spotlight

Micrographics in a Volatile State

By Bill Laberis
CW Staff

Come July 1, the 8,500-member National Micrographics Association will become the Association for Information and Image Management.

According to the NMA and micrographics industry observers, what appears as a simple name change is indicative of the volatile state in which the $2 billion-plus industry now finds itself.

Vendors' rules of operations and marketing are changing. Products and technology are changing — and very rapidly. End-user demands are changing, as are the end users themselves.

In the words of one industry consultant, "Micrographics vendors are facing an unprecedented challenge ... by which they must realize their industry is evolving from a hardware base to one which is more software-based. Success now calls for an enormous reeducation of all levels of management."

In the 1970s, the micrographics industry completely changed from

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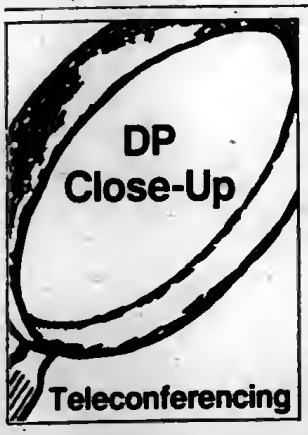

Electronic Meetings a Double-Edged Sword

By Tom Henkel
CW Staff

For most executives, teleconferencing is a two-edged sword.

On the one hand, teleconferencing — especially full-motion involving two-way audio and video transmissions — has a strong potential for reducing travel costs and boosting corporate productivity.

On the other hand, it involves high start-up and operational costs. And there is no current standard for the somewhat expensive coder/decoder, the device used to convert analog signals into satellite-transmittable digital signals and vice versa.

As it stands today, there is a lot of interest, a lot of tire kicking and a lot of what the auto industry calls "sticker shock" surrounding the market for full-motion teleconferencing systems, but little actual use.

A survey of 10 large corporations has revealed that few are actively using full-motion teleconferencing, considered to be the Rolls Royce of teleconferencing systems. Some have opted to use audio-only or two-way audio/partial video systems instead of full-motion teleconferencing. Three companies contacted last week said they carefully evaluated the prospect of full-motion teleconferencing and decided it just was not worth it.

The Bank of America, for example, has decided — at least for now — that it is cheaper to pay corporate executives' travel bills than to install a teleconferencing system, even though the firm already has a working television studio that is now used for training and other corporate functions.

Bank of America Vice-President for Telecommunications Steve Barnes also explained that most of the firm's corporate travel is between the San Francisco and Los Angeles

(Continued on Page 8)

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Ex-Bus Scheduler Acquitted of Extortion After Asking Payment for Programs

By Tom Henkel
CW Staff

DETROIT — A man who developed seven report generation programs for the Southeastern Michigan Transportation Authority (Semta) here and attempted to collect $19,500 in payment for the programs after he was fired has been acquitted of criminal charges involving extortion and violation of the state's 1980 computer crime law.

Had he been found guilty, Edward R. Kovar, 31, faced a prison term of up to 30 years.

District Court Judge Marion Moore ruled late last month that state prosecutor Thomas Bahen failed to prove that Kovar intended to extort money from Semta when he developed a series of Fortran programs with built-in security blocks that make accessing the program's source code difficult without the proper codes.

Semta had been generating reports manually using data supplied on a time-sharing basis by Sage Management, Inc. of Toronto. The data was stored in Sage's Prime Computer, Inc. Series 50/750 processor, according to Lori Lysett, Semta's manager of scheduling.

Kovar developed the seven report generation programs using Sage's processor and data, his attorney, Wallace D. McLay, admitted. He maintained, however, that Kovar's job as a scheduler at Semta did not include programming duties and that he developed the programs over a two-year period in his free time at work. McLay contended the programs have saved Semta about $150,000 over the past two years.

Semta agreed that Kovar developed the programs and that they work. However, Lysett declined to say whether the programs had saved the transit authority money.

Ultimatum Delivered

After completing the programs, Kovar asked his managers either to promote him to a job in the DP department or to change his job description to include programming duties. McLay said Semta refused both requests and fired Kovar Feb. 24 following a dispute with his manager.

After being fired, Kovar said he had a common-law copyright on the programs and asked Semta for $19,500 in payment for the programs.

McLay said that Kovar did not actually take legal steps to get a copyright on the software, but instead installed a warning in each of the programs stating that he had a copyright to the software.

According to Semta's Lysett, the transportation authority approved of Kovar's programming project and sanctioned it as part of his job. Therefore, Lysett maintained, Semta owns the software.

Furthermore, Lysett said, Kovar did not simply ask for $19,500 in return for his programming services. Instead, she said, he demanded the money before he would turn over the access codes needed to alter the source code.

McLay, however, contended that Semta never asked Kovar for the access codes.

Judge Moore ruled Kovar did not violate the state's 1980 computer crime law. She ruled that Semta management failed to provide Kovar with the proper supervision. Had management checked Kovar's work on a regular basis, the judge said, Semta would have been able to spot the built-in security blocks in the programs.

In addition, she ordered Semta to drop its extortion charges against Kovar. The judge did not, however, make a judgment on Kovar's claim of a common-law copyright to the software.

Both McLay and Semta said they plan to pursue further legal action.

This Week

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Introducing Sort Racing's Colt of the Year! (SyncSort DOS, Release 1.6.)

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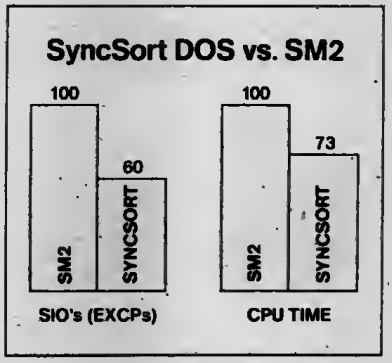


Hello, sort-racing fans! We bring you this report direct from the main clubhouse here at historic old SyncSort Farms, which has been called "the birthplace of sorting champions."

That glossy young colt you see kicking up its heels out there in the main paddock is the latest in a long line of SyncSort Triple-Crown winners. It's SyncSort DOS, Release 1.6. And it's been causing a sensation around the world's DOS/VS(E) tracks.

Here are some of the top honors it's already captured:

(1) THE PERFORMANCE CROWN: SyncSort DOS, Release 1.6 is a chip off a couple of good old blocks. Its daddy was High Technology, and its mommie was that celebrated brood mare State of the Art.

Like all its famous ancestors, Release 1.6 eats lightly of computer resources but moves very fast indeed. It's bred especially to provide dazzling performance on the 4300 series, with their Fixed Block Architecture and VSAM-type of data.

Compared to that venerable old oat burner IBM's 5746-SM2, Release 1.6 can save you up to 50% in CPU Time and up to 70% in SIOs, as the charts below indicate.

(2) THE PRODUCTIVITY CROWN: SyncSort DOS has always been a favorite with sort jockeys because it's so easy to handle. Advanced features reduce the time required for simple reports from five days to one.

Now Release 1.6 adds another popular new capability. The Sortwriter feature makes it possible to specify reports in virtually any format you require.

With a single pass of the sort, Release 1.6 can manipulate data and present the output in a wide variety of formats — with headings, trailers, totaling and sub-totaling, dating, spacing, line-skipping, character insertion, and data-format conversion.

(3) THE SERVICE CROWN: One of the reasons that SyncSort has over 6,500 users all around the world, is that we look out for the people who use our products. Our Technical Service is fast, accurate and courteous. More than 85% of all customer inquiries are resolved within 24 hours.

If you'd like to see how SyncSort DOS, Release 1.6 performs on your turf, give us a call. We'll be glad to help you set up a little "sortstakes" that will match Release 1.6 against your present sort.

After that improving the breed of your sorts should be no trouble at all.

syncsort INC.

Syncsort Incorporated 560 Sylvan Ave., Englewood Cliffs, N.J. 07632

IBM Brings Out Relational Tool For MVS Sites

(Continued from Page 53)

DB2 and SQL/DS include:

- DB2 supports much larger data bases than SQL/DS.
- Partitioned table spaces available with DB2 allow blocks of data to be processed independently.
- DB2 is "tightly coupled" with MVS/XA's 31-bit virtual addressing architecture so that "it does not chew up virtual storage resources."
- DB2 incorporates an IMS interface not present in SQL.

DB2 provides a high degree of data integrity, IBM claimed. It is a separate subsystem that operates independently of other syatems software. In some cases, concurrent activity on the same data base is permitted.

The product also includes an interactive facility — DB2I — an embedded option based on IBM's Interactive System Productivity Facility, which offers interactive access to and manipulation of DB2 files for TSO users.

In addition, users can retrieve data from DB2 catalog tables. SQL can be used to define or change data base descriptors, define or delete indexes, tables or data bases or to set security parameters.

The product also features automatic access path selection that insulates users from the need to know how data is represented in storage, IBM claimed. The data base itself selects the access path and automatically and dynamically reestablishes paths if the data base is altered.

Security is provided at two levels. Authorization statements in SQL grant and revoke authority for all levels of data, command and program access in DB2. In addition, views may be selectively defined to allow the user or application access to specific tables.

General availability of DB2 is planned for the third quarter of 1984. The initial license charge is $15,000 with a monthly charge of $2,500.

IBM's National Accounts Division is located at 1133 Westchester Ave., White Plains, N.Y. 10604.

Two Programs Supporting DB2 Also Unveiled

By Paul Gillin
CW Staff

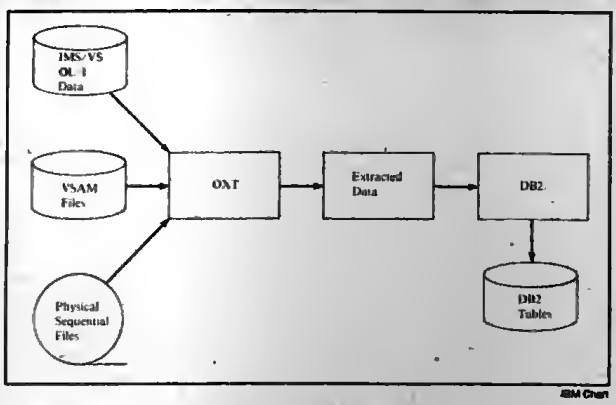
RYE BROOK, N.Y. — In conjunction with its announcement of DB2, a relational data base management system for users of its MVS/Extended Architecture (XA) and MVS/370 operating systems, IBM last week unveiled two programs designed to incorporate the product easily into current MVS environments.

The Query Management Facility (QMF) allows users to extract, manipulate and generate interactively reports from DB2 files using IBM's Structured Query Language (SQL) and Query-By-Example. The product also operates under SQL/DS Release 2 in a VM/SP environment.

Data definition functions are performed through SQL, and a set of Help panels and sample SQL queries are provided, a spokesman noted.

User-specified report formats can be created, or default formats can be used by filling in values. A sample program that can invoke IBM's Interactive Chart Utility for graphics presentation of data is provided, the spokesman said. Users can also create a procedure definition that allows a series of commands to be executed through a single command.

QMF will be available in the second quarter of 1984 for VM/SP environments and in the third quarter of 1984 for MVS/XA and MVS/370. The initial license fee is $6,000 with a $1,000 monthly charge.



Database 2 and Data Extract

The second product introduced last week, Data Extract (DXT), extracts selected operational data from IMS/VS or DL/1 data bases and Vsam and SAM data sets and prepares it for loading into DB2. DXT is designed for programmers or users who can formulate an IBM/VS, Vsam or SAM extract request, IBM said.

The data is extracted using one or two views of the data base or data set. Optionally, an OS/VS DB/DC data dictionary can be used for stored data. Dialogs, which are also included in QMF, allow interactive request construction and submission.

Descriptions of data to be extracted can be prepared manually or obtained from the data dictionary. Requests are submitted to the DXT user input manager and queued in a request library for extraction.

The data extract manager includes security features and volume criteria that set priorities for requests. The data extract manager can also fetch extract requests for large files.

DXT dialogs consist of Interactive System Productivity Facility menu-driven panels that guide the process of creating an extract request. The product also includes JCL prompts, user-configurable model extract statements and request submission capabilities.

DXT will be available in the second quarter of 1984. The cost for an initial license is $3,600 with a $600 monthly charge. Both products are available from IBM's National Accounts Division, 1133 Westchester Ave., White Plains, N.Y. 10604.

DB2 Seen Easing Move Into Relational

(Continued from Page 1)

the original house is now the addition," said Jerry Chichester, president of Focus Research Systems, Inc. of West Hartford, Conn. Chichester said both IBM and Cullinet Software, Inc., which recently announced IDMS/R [CW, April 25], have adopted marketing strategies that "will allow their [current] and new user bases to slide into the relational world a step at a time. They may never know when they're there."

Bob Cook, president of VM Software, Inc. in Falls Church, Va., suggested that IBM "will evolve DB2 so the IMS data structures, as we know them today, in five or 10 years won't exist." The gradual change will be "hopefully painless for the user."

IBM had no choice but to introduce the relational system for larger applications "because the end users want access to corporate data and IMS wasn't providing an easy facility to do that," Cook said.

Chichester agreed that the announcement is good newa for the ease-of-use camp. Moreover, he said, IBM'a announcement may be a direct reaction to its downward trend in the data base marketplace. Focus Research haa noted a reduction in the percentage of growth of IBM's installed IMS and DL/1 base from 21.6% in 1980 to 13.4% in 1982.

During its quarterly surveys of IBM installations, the firm also has found that the percentage of buyers who reported they plan to buy IBM DBMS products has declined aharply from 39% in the second quarter of 1982 to 25% io the first quarter of 1983. "in May, for the first time in history, more people told us they planned to buy [Cullinet's] IDMS than IBM data base systems," Chichester noted.

Although IBM has done a good job promoting the information center concept, Chichester said, it has not had many products to offer for this environment. "I think DB2 can be viewed as much as an effort to install tools for the information center as well as an effort to atem the tide in data base."

In line with the information center concept, "IBM has provided impressive end-user interfaces with DB2," said Ann Morley, manager of software and computer services research for International Data Corp. in Framingham, Mass. "For somebody who was an SQL/DS user and upgrades to become a DB2 user, the query language is very similar."

IBM was "very sensitive to making the front end [of DB2] as user-transparent as possible," Morley said. "Also, [Query Management Facility] allows users to either do a table-driven or command-driven front end using [Query by Example] or [Structured Query Language]. That sort of broadens people's comfort."

DB2 'Disappointing'

The announcement of DB2 represents an important endorsement by IBM of the relational concept, but the product is "disappointing" in other ways, according to Curt Monash, a software industry analyst with Paine Webber Mitchell Hutchins, Inc. in New York. "The products announced for the third quarter of 1984 seem substantially less capable than some of the products we can expect to see from the independent DBMS vendors early in 1984," he said.

With DB2, users still have not gained the ability to query directly against the production data base, so the product falls short as an application development facility, Monash said. He added that companies such as Applied Data Research, Inc. and Cullinet are trying to "demolish completely the distinction between production and end-user data bases."

APPLIED DATA RESEARCH

Displaywriter Gets 3270 Emulation, Graphics

By Ed Scannell
CW Staff

RYE BROOK, N.Y. — IBM last week unveiled a series of software packages that provides its Displaywriter text processor with business graphics and enhanced 3270 emulation capabilities.

Christened Chartpack, the business graphics package reportedly allows Displaywriter users to create, update, display and print bar, line, pie and free-form charts. All charts can be stored on a diskette and merged with text documents, IBM said.

Compatible with IBM's Textpack 4 or 6 word processing programs, Chartpack will be available in October for a one-time charge of $550. A necessary display adapter is included at no charge. Two optional 12-pitch typestyle print wheels are also available.

The 3270 Attached Workstation program permits the Displaywriter to emulate the abilities of the company's 3278 display terminal and 3287 printer when the Displaywriter is connected by coaxial cable to the 3274 and 3276 control units. The program also enables documents to be sent back and forth between a Displaywriter diskette and an appropriately programmed host computer.

Like Chartpack, the 3270 emulation package can be used with Textpack 4 and 6 programs. Scheduled for release in September, it carries a one-time charge of $800. A 3274/3276 attached workstation adapter, which hooks the Displaywriter up to a host system, will also be available in September for $1,400.

IBM said it will release an enhancement in October for the 3270 package that will let users alternate between local Displaywriter functions and 3270 applications on the host without terminating either operation. Because this alternating requires 128K more bytes of memory than typical text operations, the company will introduce a Displaywriter display station with 448K bytes of memory in September.

The 25-line display station is expected to cost $5,315. A 66-line display priced at $6,710 will also be available. Both versions will be available through the company's lease plan for Displaywriter equipment.

IBM also enhanced its UCSD P-System operating system software that permits the Displaywriter to run data processing applications. One improvement permits the Displaywriter to exchange diskette files with the firm's System/23 Datamaster, System/34 and System/38, IBM said. The enhancements will be available this month, the company added.

A printing procedure that allows documents containing mathematical equations to be printed in multiple passes using a different print wheel for each pass has been added to the Textpack 6 word processing package. The enhancement will be free.

More information about the software is available from IBM, 900 King St., Rye Brook, N.Y. 10573.

IBM Cuts Price Of Displaywriter

RYE BROOK, N.Y. — Besides announcing software that provides its Displaywriter text processor with business graphics and enhanced 3270 emulation capabilities, IBM also announced last week that it is dropping the Displaywriter's price by 24% when it is purchased as a stand-alone system and by 30% when it serves as part of a printer-sharing configuration.

The cost of the basic stand-alone system is now $4,990, down from $6,260. A system with advanced text processing capabilities typically costs $9,330, compared with its former cost of $11,5SS, and a system with two workstations and sharing a printer now costs $7,800 instead of $10,960.

IBM also made the following purchase cuts in associated equipment:

- The 6580 display stations with 25-line displays, which formerly ranged in price from $3,585 to $5,985, now cost $2,815 to $4,815. Prices on the 66-line stations dropped from a range of $5,785 to $8,185 to a range of $4,210 to $6,210.
- The 15 char./sec Model 5215 printer was cut from $1,500 to $1,000.
- Model 5218 printers were reduced by $595. The 40 char./sec version now costs $3,280, while the 60 char./sec version lists for $3,680.
- Prices of the firm's 6360 diskette units were also dropped. The Model 010 now costs $1,000, down from $1,100; the Model 011 was reduced to $1,675 from $2,100; the Model 020 now costs $1,400 instead of $1,700; and the Model 022 is now priced at $2,100 compared with $3,300.

New volume purchasing discount levels and percentages were also announced by IBM for the Displaywriter, its licensed programs and correspondence-quality printers. For example, new discount levels for the 6580 display stations and 6360 diskette units include levels of two to 19 units for 6%, 100 to 199 units for 20% and 200 or more units for 24%. The lowest previous level was for 6 to 19 units for 6%, and the highest level was 15% for 50 or more.

More information about the price cuts is available from IBM at 900 King St., Rye Brook, N.Y. 10573.

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McGill Resigns Presidency of AIS Division

(Continued from Page 1)

McGill those instead to quit.

McGill could not be reached for comment, but said in a prepared statement, "Now is the time to move on." He gave no indication of future plans.

McGill's duties at AIS have been split between Robert J. Casale, named AIS president for marketing and sales of business products and services, and Frank S. Vigilante, appointed AIS president for product planning and development.

Meanwhile, it was announced that Randall L. Tobias, president of American Bell's Consumer Products Division, will head the new consumer telephone equipment group at Western Electric, taking along with him some 1,500 former American Bell employees.

On the surface, the reorganization of American Bell and the resignation of McGill are further evidence of a complete overhaul of the fledgling American Bell, formed just six months ago following the court-ordered reorganization of AT&T. American Bell was formed as an unregulated subsidiary designed to carry the AT&T banner into the competitive arena of computer equipment and services.

Gutsy Marketing Man

McGill, 52, had come to AT&T 10 years ago after 13 years with IBM. He was supposed to lead this competitive charge into lucrative vertical markets. Known as a gutsy, polished marketing man, McGill spent millions of AIS dollars in recent months promoting the division and its promises of new, competitive offerings. He was lauded for recruiting top talent to AT&T during his 10-year tenure, often raiding his former employer, IBM, for his choicest selections.

McGill also was credited with pioneering a more aggressive marketing philosophy within AT&T, which Wall Street saw as essential to the success of AT&T's unregulated operations.

However, as some observers noted, AIS has been slow in getting products to market, and those that have arrived "have largely been disappointments, despite all the hype coming from McGill's office," one analyst, Charles Robbins, a communications analyst at International Data Corp. (IDC) in Framingham, Mass., said.

"His leaving may have come down to a matter of marketing vs. reality," Robbins said. "There's been plenty of market talk from AIS, much more than [there has been] substance in its product offerings."

Robbins said a recent IDC study indicated that many AT&T customers will opt for the private branch exchange offerings of companies like Rolm Corp. and Northern Telecom, Inc., ignoring AIS' System 85, which Robbins said "is not truly competitive in the market."

Another AT&T observer said several of his contacts within AIS' marketing ranks "are complaining of dissension within the ranks . . . they're being asked to fulfill what they think are totally unrealistic sales goals."

Dixon Doll, communications consultant and president of The DMW Group, Inc., characterized McGill as a "change agent . . whose aggressiveness is tailor-made to cause things to happen quickly." However, this approach "is culturally at odds with the telephone company mentality which has pervaded AT&T as a monopoly."

Doll said McGill's resignation was likely prompted "by somebody else high in the organization who encroached on his power base . . . It is quite clear that some of the more traditional AT&T types made a play for power at his expense."

The transfer of customer products responsibility to Western Electric was "the straw that broke the camel's back, as far as McGill was probably concerned," Doll said, criticizing that move as "taking 39 giant steps backward by putting an important part of American Bell's business back where it can be contaminated by the monopolistic culture."

Alysa Subtelny, senior analyst at The Yankee Group in Boston, said rumors of McGill's departure from AIS "have been floating around for several weeks." His resignation nonetheless came as a surprise because he had operated as AIS' chief for only six months, she observed.

Like Doll, Subtelny speculated that a consulting stint might become a part of McGill's immediate career plans, adding, "there's always politics for a man like him."

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Congress Urged to Set Up Body To Enforce Privacy Act of '74

WASHINGTON, D.C. — The federal government has done little to enforce the Privacy Act, a Congressional subcommittee was told last week as it heard testimony urging establishment of a privacy oversight body to enforce the 1974 law regulating government gathering and dissemination of personal information.

When the law was passed, Congress decided not to set up such an organization, choosing instead to assign the Office of Management and Budget (OMB) the task of drafting guidelines and regulations on Privacy Act implementation. But Rep. Glenn English (D-Okla.), chairman of the House Subcommittee on Government Information, Justice and Agriculture, suggested OMB has failed to live up to its responsibility.

During hearings last week — the first general hearings on the act since it went into effect in late 1975 — English elicited testimony from OMB officials claiming that the agency does not specifically check for Privacy Act compliance by government agencies.

Because the law did not give OMB statutory authority to disapprove agency recordkeeping and dissemination practices, the matter only comes up if brought to OMB attention by the agencies, which can ignore OMB suggestions, Christopher DeMuth, director of the OMB Office of Information and Regulatory Affairs, said. He nonetheless defended his office's handling of Privacy Act matters as "not a whimsical approach."

English, however, told the hearing that "the bureaucracy, with the approval of OMB, has drained much of the substance out of the act."

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Memory and Upkeep Fees Trimmed on AS/8000, 9000

MOUNTAIN VIEW, Calif. — National Advanced Systems, Inc. (NAS) last week responded to recent IBM price cuts by trimming the main memory and maintenance charges for two of its IBM-compatible processor lines.

NAS has lowered main memory prices by 25% for its Advanced System (AS)/9000 mainframe family and by about 6% for its AS/8000 series.

The mainframer has also cut the maintenance charges for the two processor lines by 5% to 12%, a company spokesman said. The maintenance price reductions vary depending on the configuration.

As a result of last week's price cuts, an 8M-byte increment of main memory for an AS/9000 machine now costs $150,000. The same amount of storage formerly cost $200,000.

NAS' price moves also affect the cost of a 4M-byte main memory increment for the AS/8000 line, which the firm introduced only a month ago. Formerly priced at $80,000, a 4M-byte memory module now sells for $75,000.

The reduced prices reportedly apply both to new AS/9000 and AS/8000 systems and to field upgrades of existing configurations.

NAS' latest pricing adjustments come hard on the heels of IBM's May 24 disclosure that it has cut main memory charges for all of its 3080 processor models by 20%. As part of the announcement, IBM also pared the 3080 line's minimum monthly maintenance fees by 12% to 15%.

NCR Offering Net Service For Voice/Data

DAYTON, Ohio — NCR Corp. has announced a point-to-point transparent data and voice transmission service called National Net that it is making available through a newly formed, wholly owned subsidiary called NCR Telecommunications Services, Inc. (NCR/TSI).

National Net can reportedly transmit data at 1,200, 4,800 or 9,600 bit/sec over dedicated lines using statistical time-division multiplexers. Voice transmissions are made at standard bandwidths through private branch exchanges located at the sending and receiving sites.

According to NCR/TSI President G. James Bracknell, National Net is a transparent service, which means it can be used by any hardware or software architecture and any protocol.

Currently available only for transmissions emanating from Dayton to any other location in the U.S., the service will be expanded to include San Francisco in July and New York in September. Other cities will be added in 1984, Bracknell said.

National Net currently has one user, NCR Universal Credit Union (not part of NCR Corp.), which uses the service to provide automatic teller machine transactions between Dayton and Minneapolis.

National Net is available immediately to other Dayton users. The service reportedly costs between 20% and 80% less than similar transmission services from AT&T.

The price varies depending on the distance and transmission rate selected. As an example, Bracknell said, 4,800 bit/sec transmission service between Atlanta and Dayton costs $585/mo. Bracknell claimed the same service costs $732/mo from AT&T.

Transmissions via National Net will be sent either via terrestrial lines or satellite links, depending on where and how far data is transmitted.

NCR/TSI is located at NCR world headquarters, Dayton, Ohio 45479.

CDC Adds Mid-Range Mainframe

MINNEAPOLIS — Control Data Corp. has extended its Cyber 170 Series 800 line of mainframes with a mid-range system that will compete against IBM's 3083 Model B for manufacturing and scientific applications.

Designed with many of the same architectural features as CDC's Model 855, the Model 845 is compatible with the other six members of the Series 800 family and uses the company's NOS operating system. Benchmarks show the system can process up to 5.4 million instructions per second, CDC said.

Capable of supporting up to 16M bytes of memory, the new system reportedly has twice the processing power of the Model 835. According to S.L. Rickelman, CDC's vice-president of computer systems marketing, the system will provide users with more flexibility "In selecting the most cost-effective growth path to meet their specific needs."

A bare-boned Model 845 with 4M bytes of main memory, 10 peripheral processors and 12 channels costs $1,275,000. It can be leased for $39,330/mo on a one-year contract, a vendor spokesman said.

First shipments of the systems are scheduled to begin during the fourth quarter. CDC can be reached through Box O, Minneapolis, Minn. 55440.

Teleconferencing Proving Double-Edged Sword

(Continued from Page 1)

offices and that these travel costs are not outrageous.

About a year ago, Bank of America was considering custom building its own 1.5M bit/sec teleconferencing system using the television studio as a base. However, Barnes said the plan could not be cost justified.

Instead, the firm decided to use an audio-only conferencing system that can link eight to nine people via the telephone. The current system does not, however, have provisions for distributing charts or documents among the participants in the conference. Vital documents are either mailed out or sent via facsimile prior to the meeting.

While Bank of America has decided against teleconferencing for now, the door is not closed on the idea. If equipment and transmission costs go down, or if there is a stronger need for meetings with the firm's New York office, teleconferencing may then be justified, Barnes noted.

E.F. Hutton Group, Inc., a securities house, seriously evaluated teleconferencing and decided it was too expensive. According to First Vice-President of Communications and Order Processing, Bernie Weinstein, "unless there is some dramatic breakthrough," teleconferencing is out of the picture for the firm.

About two years ago, Hutton was considering a teleconferencing system offered by Satellite Business Systems (SBS). The teleconferencing system was part of a larger proposal submitted by SBS. While Weinstein said he did not recall exactly how much the teleconferencing system would have cost, he did say it was "significant." However, after some consideration, Hutton executives decided not to go through with the idea.

Instead, the firm is using a voice intercom system and a voice-and-data teleconferencing system that does not have video, Weinstein explained.

Pittsburgh-based Westinghouse Electric Corp., while very interested in full-motion teleconferencing, has decided that until a standard emerges in the type of coder/decoder that can be used, the firm will stick with a wait-and-see attitude, according to Ralph Krichbaum, manager of communications planning.

Krichbaum explained that there are currently three coder/decoders typically used in teleconferencing systems. The coder/decoders are manufactured by Compression Labs, Inc.; Nippon Electric Co (NEC); and AT&T.

The AT&T coder/decoder is a specialized version of the NEC coder/decoder. The three are not compatible, Krichbaum said, adding that since the units cost about $150,000 each, Westinghouse plans on waiting until one emerges as a clear, de facto standard. That may take 18 months, he said.

Until then, Krichbaum said, Westinghouse is using a freeze-frame teleconferencing system. Unlike full motion, freeze frame is limited to two-way audio plus very basic video transmissions. The video consists mainly of still pictures of the people at the meeting or the transmission of vital charts and graphs.

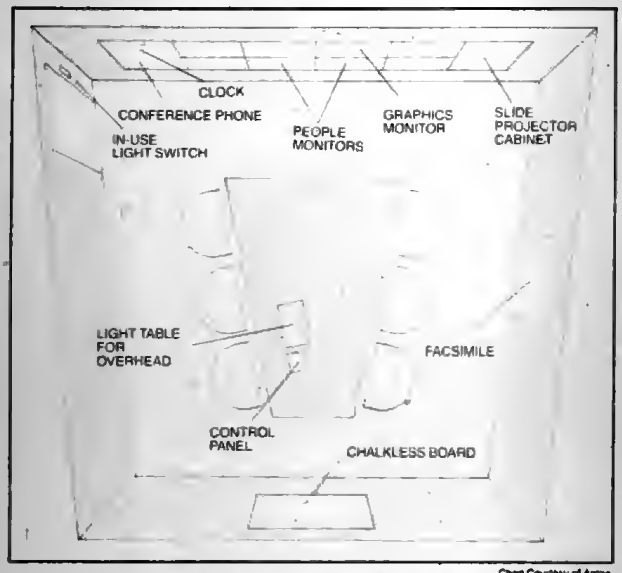

Chart Courtesy of Aetna

One of Aetna's Teleconferencing Rooms

But while some companies are shying away from full-motion teleconferencing, Hartford, Conn.-based Aetna Life & Casualty Co. has been using its system since March 1980, and according to Mark Powell, senior administrator for corporate communications, the system is paying for itself.

Admitting that full-motion teleconferencing systems can be somewhat expensive, Powell said the secret to a cost-justifiable implementation is to develop the television rooms internally rather than hiring a turnkey firm to custom design a transmission room. "We would have spent another $900,000 had we farmed the [room design] work," Powell said.

The first phase of Aetna's full-motion teleconferencing system, a terrestrial-based system linking four conference rooms in the Hartford area, will be paid for in four years, Powell said. He estimates that Aetna is saving about $325,000 a year in time previously lost in travel between the Hartford headquarters and the firm's data center about nine miles away.

Recently, Powell said, Aetna expanded the teleconferencing system to include a satellite link with the firm's Chicago office. Again, Aetna built its own transmission room and is using Satellite Business Systems, part of which it owns, as a carrier.

The firm also plans to expand the system to include at least its San Francisco office, Powell said.

Not only is the teleconferencing system working out at Aetna, but in some ways it is better than face-to-face meetings, Powell contends. Noting that the system was not installed as a hedge against travel costs but as a way to get busy people together quickly, Powell said Aetna has come up with some innovative uses for the system, like breakfast meetings and conversations over candle-lit dinners, which help keep user enthusiasm high.

The Cost? Pretty Stiff

NORWALK, Conn. — How much does a typical full-motion teleconferencing system cost? According to International Resource Development, Inc. (IRD), the costs can become rather stiff for firms that want to implement a fully equipped system.

For example, an in-house teleconferencing room with cameras, microphones and coder/decoder will cost somewhere between $250,000 and $750,000 per site. The majority of that cost is consumed by the coder/decoder, which costs about $150,000, IRD analyst Dave Ledecky noted.

In addition, sending satellite transmissions from one place to another requires an earth station, which costs about $750,000 plus transmission costs — about $300 to $500 per hour for transponder time. If the system is land-based, transmission costs are about $30,000 per month for private lines.

But users do not typically install a teleconferencing system from scratch, according to a spokesman for Satellite Business Systems, which offers a digital switching system that can be used for teleconferencing. For example, a company sophisticated enough to consider teleconferencing probably already has an earth station and possibly some other components of a teleconferencing system as well, he said.

Report: User Distrust, Not Cost, the Problem

NORWALK, Conn. — While full-motion teleconferencing systems — those that most resemble two-way television — are not cheap, distrust among users rather than high cost is their biggest stumbling block. And time, accompanied by improved technologies, may be the only solution to the problem.

Meetings conducted via teleconferencing tend to be impersonal, distracting and foreign to people comfortable with face-to-face meetings. Furthermore, since most users are products of a television society, they expect everyone who appears on a video screen to have the poise and polish of a newscaster. Realistically, the boss just does not make it as a television star, and his credibility can be weakened as a result.

Those are some observations from a recent report on teleconferencing released by International Resource Development, Inc. (IRD), a research firm based here. Basically, the report said that although teleconferencing has tremendous potential, the demand for such systems has not been very strong because teleconferencing does not offer the same benefits as face-to-face meetings, IRD analyst Dave Ledecky claimed.

There is no doubt that the teleconferencing industry will boom over the next 10 years, IRD noted. The market, which reaped about $98.3 million in revenues in 1982, is expected to generate about $637 million in revenues by 1992. Those figures, IRD said, include all forms of conferencing such as audio-only, audiographic, freeze-frame video and full-motion video.

Subtle gestures and body language, indicating warm or hostile feelings, are subconsciously picked up by people in a face-to-face meeting but lost through teleconferencing, Ledecky said. Smell, another important subconscious barometer used to test the atmosphere of a business meeting, is also missed in a teleconference.

Furthermore, things normally overlooked in a face-to-face meeting can be exaggerated to the point of being offensive in a teleconference. The presenter's style of dress or minute physical habits can be offensive to people used to seeing perfection on a television screen, Ledecky said.

"Generally, it is difficult to meet someone effectively for the first time through a conferencing medium," the report noted. In addition, fairly formal, result-oriented meetings tend to be more successful than open-ended informal meetings when presented via teleconferencing.

There are possible solutions to the problems associated with teleconferencing, but they have not been invented yet. For example, Ledecky said, using holograms of people rather than two-dimensional images projected on a screen may overcome some of the complaints about the medium being impersonal. Machines that reproduce the smells in the respective meeting rooms might also be a big improvement, IRD's researcher pointed out.

The IRD report costs $985. More information is available from IRD at 30 High St., Norwalk, Conn. 06851.

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Along With Four Other Products

Software AG Premieres 'Natural' for Vsam

By Lois Paul
CW Staff

NEW ORLEANS — Software AG of North America, Inc. used the forum provided by its 12th international users conference here last week to launch several products, including a version of its fourth-generation application development system for use with IBM Vsam files.

The other products introduced to the approximately 950 attendees included:

- Predict, an on-line data dictionary specifically for fourth-generation application development environments.
- Office Information System, which offers electronic mail, text processing and resource scheduling.
- The Natural Security System for centralized control of the Natural environment.
- Adabas/VAX, an implementation of the vendor's Adabas data base management system (DBMS) for Digital Equipment Corp.'s VAX/VMS operating system that is said to be fully compatible with the mainframe implementation.

Until its introduction of Natural/Vsam, which reportedly will be available this summer for installations using Vsam files, the vendor's Natural product could be used only by installations that had Adabas.

Natural/Vsam is said to contain features available in the current release of Natural for users of Adabas. These include a fourth-generation programming language, a menu-driven report writer and screen map generator, data management commands for access to user data and transaction processing capabilities.

The purchase price for Natural/Vsam starts at $50,000 for IBM DOS users and $70,000 for MVS users.

Donald M. France, senior vice-president of sales and marketing for Software AG, said the products introduced by the company last week are intended to address the DP department's need to improve productivity and control corporate data as information access by end users explodes. "One approach is putting everything under the control of a data dictionary," France said, but "our approach is to use a fourth-generation language as a front end, supported by a data dictionary and a security system."

Predict Version 1, the approach to which France referred, is scheduled for availability in midsummer. It was described by Software AG as the first in a series of products to provide a central repository of information about data and the ways in which it is used in an organization's business system.

Predict was designed to complement Natural by providing the necessary controls in either centralized or distributed systems without inhibiting the flow of necessary information. It is priced at $10,000.

The Office Information System that the vendor plans to offer will be modularized. The first package, which will include electronic mail, text processing and resource management components, will range in price from $40,000 to $60,000.

As additional components are added, they will cost between $15,000 and $20,000, France projected. These products are scheduled for availability by late 1983.

The Natural Security System is intended to provide security controls for all operating environments supported by Natural, protecting on-line or batch Natural activity with or without interaction with the security functions of the Adabas DBMS or the vendor's Com-Plete teleprocessing monitor. This product will be available in late summer for $15,000.

Adabas for the VAX reportedly contains the same functional capability found in Software AG's mainframe version of Adabas. It is said to be a complete replacement for the VAX version of Adabas-M, of which Software AG suspended marketing last fall because of "structural design deficiencies" [CW, Nov. 1]. Targeted availability for the product is year-end, with a price of approximately $70,000.

More information about the products announced last week is available from Software AG, 11800 Sunrise Valley Drive, Reston, Va. 22091.

CW at Saggroup

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New Type of Data Management Tool Urged

By Lois Paul
CW Staff

NEW ORLEANS — A new type of automated tool is required to solve the problems inherent in building effective data management facilities, attendees at the Software AG of North America, Inc. User Group's (Saggroup) 12th annual international meeting were told here last week.

This tool will go well beyond the individual impact of concepts such as relational data base management systems, distributed processing, fourth-generation languages and personal computers. Instead, it will involve an integrated perspective that will enable users to employ all of these tools, said Ronald G. Ross, editor of the "Data Base Newsletter" and director of research for the Data Base Research Group in Newton Lower Falls, Mass.

CW at Saggroup

The problems encountered in building effective data management facilities, as Ross defined them, evolve from what he called the "seven deadly sins of data base":

- Lack of strategic planning.
- Application data bases that do not share data.
- Failure to use data base conventions to design data base systems.
- Failure to design logical architecture before jumping into physical design.
- Failure to refine the logical architecture.
- Failure to record specifications.
- Lack of good communication and low end-user participation.

In attempting to solve these problems, users often turn to the data dictionary. But, Ross maintained, "I simply don't believe the dictionary systems as we know them today will solve these problems."

Several Myths

Data dictionary systems have been oversold, he said, and are surrounded by several myths. The first is that the data dictionary can help the systems design process. "Data dictionary systems help us in the implementation and maintenance stages, but do little in the analysis and design phases," he said.

Photo Courtesy of Software AG
Ronald G. Ross

The second myth is that data dictionary extensibility, which allows users to tailor the dictionary, can help solve some of these problems. Ross thinks this in-house route is full of dangers. For example, the DP staff may underestimate the complexity and cost of these changes and eventually wind up with a maintenance headache.

Myth No. 3, according to Ross, is that the data dictionary can serve as a focal point for an integrated data management product line. "I believe the problems are much too high level for this kind of integration through the data dictionary to suffice."

To avoid the seven deadly sins, Ross suggested moving beyond the data dictionary toward a system that will facilitate the building of a business model and accommodate an information definition, a usage definition and an environment definition.

Ross explained that the functions of data base administrators and data administrators evolved as components of data, but were separated from the applications programs. Since the model development system he envisions involves separating data definitions from the business data model, this method creates the need for a new position, that of model administrator.

This person should be at the highest administrative level within the data base group, Ross said, with both the data administrator and data base administrator reporting to him. He should be located outside of data processing because existing conditions have prevented DP itself from setting its own system priorities and implementation strategies.

Ross predicted that although the emphasis of the late '70s was toward decentralization of the DP function, the pendulum will swing back to centralization later in this decade. This will involve a heavy use of the model development system and higher level implementation strategies as users begin to realize that their needs will not be met until these components are placed in a centralized fashion.

Moreover, "I would encourage centralized data resource development," Ross said. Without it, the current development pyramid that exists in most companies will become a monster characterized by vast complexity and data migration, he said.

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MCI Planning New Communications Services

By Phil Hirsch
CW Washington Bureau

ANAHEIM, Calif. — MCI Communications Corp. plans to begin offering data communications services late this year using new fiber-optic, microwave and satellite transmission facilities, MCI Chairman Bill McGowan said here recently.

McGowan, interviewed during the International Communications Association's annual conference earlier this month, provided few details on the services, but did say they will include packet-switched offerings at speeds higher than those currently available, be priced on a volume-sensitive basis and be offered with a broad range of discounts.

McGowan also reported that in Atlanta and Omaha, MCI is testing cable TV to bypass local telephone company networks. McGowan said he is "not worried" about efforts to regulate such offerings.

In Nebraska, for example, the Nebraska Public Utilities Commission has enjoined the Omaha test — a collaboration between MCI and Cox Cable Corp. — but has agreed to defer the order pending an appeal by Cox to the Federal Communications Commission (FCC). Meanwhile, the National Association of State Regulatory Commissioners is insisting that a pending Senate bill, S. 66, establish the right of state utility commissions to regulate cable TV channels used for voice and data communications.

Even if these regulatory efforts are successful, McGowan said, digital termination systems (DTS) "are an alternative." He believes that DTS fall under the jurisdiction of the FCC rather than the states. MCI has received FCC approval to offer DTS and is now installing facilities in three cities. Its first tariff is likely to be filed "before the end of the year," McGowan said.

Although MCI is greatly expanding its transmission capacity, AT&T is doing likewise. The intercity market — despite telephone company claims to the contrary — therefore is not going to become more competitive for a long time, McGowan said. AT&T now has more than 90% of the business.

To make the telephone company's publicly stated fears about losing its market share a reality, MCI "would have to invest $17 billion in new plants over the next five years," McGowan said. MCI's actual investment, he added, will be far less.

There will be "downward pressure" on long-distance rates in the wake of the FCC's access charge decision and AT&T's impending divestiture of its Bell operating companies, but McGowan believes the pressure will be caused by politics rather than by commission or court action.

Although intercity carriers' costs will be reduced by the transfer to end users of local-access charges, AT&T will seek and probably receive a higher rate of return, along with accelerated depreciation charges, McGowan said. He expects AT&T to contend that these changes have soaked up all of the cost savings produced by the transfer of access charges.

However, users — particularly large corporate customers — will demand lower rates, McGowan added, and Congress as well as state and federal regulators will agree with them; so some adjustment is probable.

MCI gets along better with the Bell operating companies than with AT&T, McGowan said. He suspects this reflects the companies' growing independence and their realization that to succeed in the new telecommunications environment, they must be more receptive to customer needs.

AT&T Requests Discount Rates

WASHINGTON, D.C. — AT&T has asked the Federal Communications Commission (FCC) to approve two experimental discount rate structures in Nevada and North Dakota.

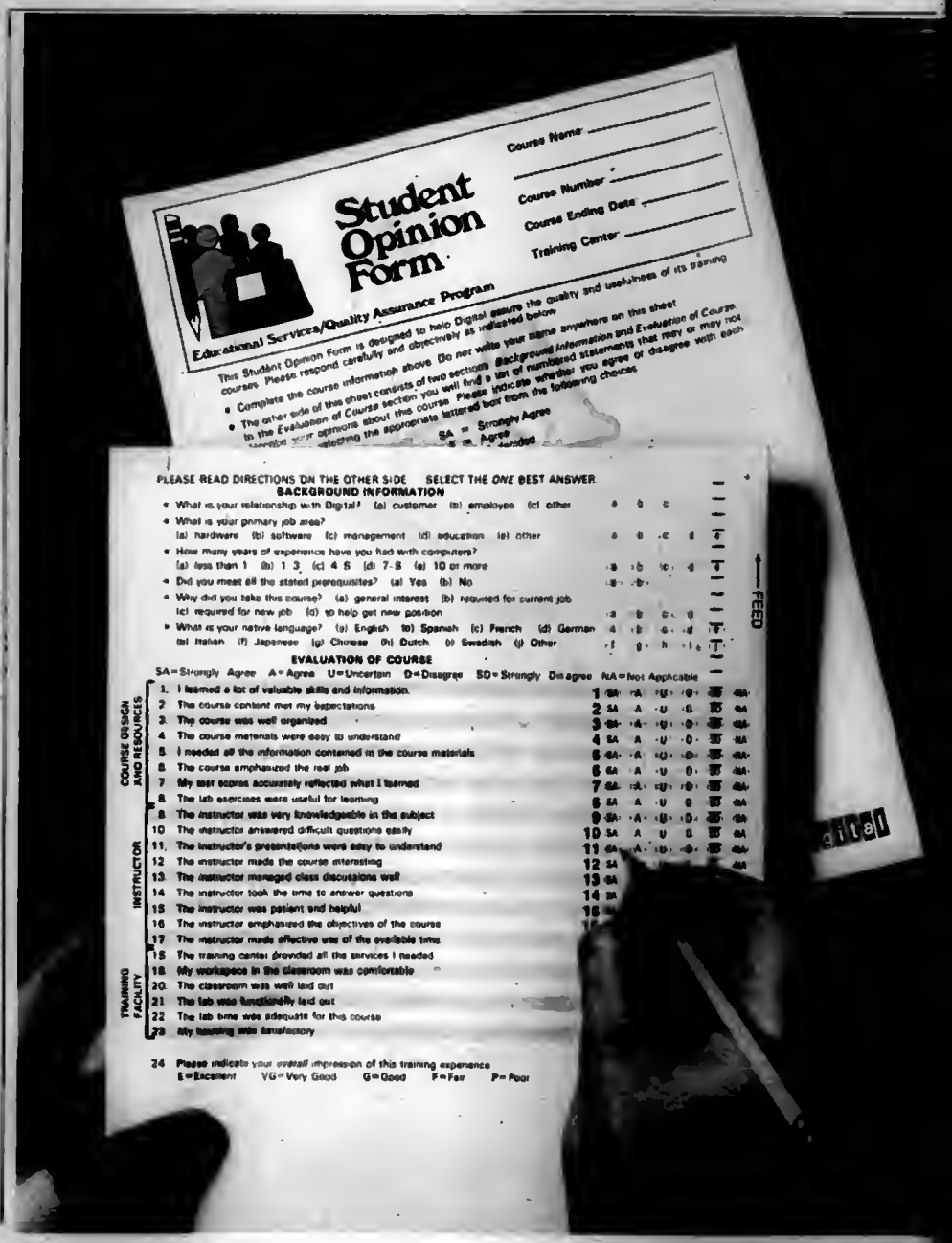
In making the June 6 request, AT&T said the experimental rate plans were designed to test changes in the firm's interstate long-distance rate structures. If approved, the new rates will go into effect June 21.

In Nevada, AT&T asked permission to introduce a 20% weekday discount rate between 8 a.m. and 9 a.m., between noon and 1 p.m. and between 4 p.m. and 5 p.m. Currently, AT&T does not offer discounts during these calling periods.

In North Dakota, AT&T asked the FCC for permission to raise its rates on calls made Saturdays between 9 a.m. and noon. AT&T wants to lower its current 60% discount offered during that period to 40%.

The proposed rates would apply to toll calls originating in the two states and placed without operator assistance from noncoin telephones to any location in the U.S., Puerto Rico or the U.S. Virgin Islands. An AT&T spokeswoman said the rate changes would also apply to users of telephone lines for data communications.

AT&T said the proposed changes will help the firm evaluate whether the discounts better serve customers' needs and whether the changes will provide more efficient use of the AT&T telecommunications network by stimulating calling during low-use periods.



After Access Charge Plan Takes Effect

Long-Distance Rates May Not Fall: AT&T VP

By Phil Hirsch
CW Washington Bureau

ANAHEIM, Calif. — AT&T will be "constrained" in its ability to lower long-distance rates after the Federal Communications Commission's (FCC) new access charge plan becomes effective, AT&T Assistant Vice-President Larry Garfinkel said here recently.

Interviewed during the International Communications Association's annual conference, Garfinkel, one of the top executives of AT&T's Long Lines Division, explained why the FCC order — even though it initially reduces interexchange carriers' annual costs by about $5 billion and will save them even more later on — will not necessarily produce commensurate reductions for users of long-distance services.

One reason is that "each divested Bell operating company will bill its customers for AT&T-supplied interexchange services, and we will have to pay for this service," Garfinkel explained.

"We don't know what this charge will be, but it is clear the Bell operating companies intend their billing services to earn a profit."

Another constraint is the need to maintain a "balance" among all of AT&T's long-distance rates. This means not lowering charges for a particular service so much that users abandon the company's other services en masse, according to Garfinkel.

Private-line rates are likely to go up rather than down, he added, because the FCC plan requires first-time users of these services to help pay for the access facilities supplied by their local telephone companies.

Wats rates, meanwhile, are likely to come down "slightly more" in terms of percentage than Message Toll Service (MTS) — for example, dial-up long distance — but Garfinkel said the reductions probably will be concentrated in the categories of each service most subject to competition. In the case of Wats, for example, the users gaining the greatest benefits would be those buying 100 hours or more of service per month and communicating with areas 500 or more miles away.

That is what AT&T hopes to do. However, since the Long Lines Division is still subject to FCC regulation, the end result may be quite different, Garfinkel said.

Off-Peak Calling Plan

In addition, Garfinkel reported that a new off-peak calling plan for MTS users, proposed to the FCC last month and scheduled to be tested in two states this month (story on Page 12), will be extended to AT&T's Wats and broadband-switched data communications offerings if it proves successful. The test plan grants an approximate 20% discount on calls placed between 8 a.m. and 9 a.m. and between noon and 1 p.m. and reduces rates even more for late-night calls. The late-night rate reduction, Garfinkel explained, is intended specifically to appeal to users of low-speed data communications services.

Garfinkel also contended that the interexchange communications market soon will be competitive, largely because of new terrestrial and satellite channels being added by MCI Communications Corp. and other specialized carriers.

In addition, he explicitly stated that the Long Lines Division has no plans to offer usage-sensitive private-line services and reported that AT&T's Basic Packet Switching Service will be operational throughout the U.S. by the end of this year. Five switching centers will be on the air by then, and multiplexers will be installed in a number of additional cities.

Garfinkel also said that the reliability of the Dataphone Digital Service will be increased and that the Long Lines Division has "no plans" to bypass local exchange networks. But Long Lines officials are thinking about offering services within the Local Access and Transport Areas to be established after divestiture.

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PE Users Meet Set for Oct. 23

CHERRY HILL, N.J. — Perkin-Elmer Corp. announced that Interchange '83, the company's annual users group meeting, will be held here Oct. 23-27 at the Cherry Hill Inn.

Keynote speaker at this year's meeting will be William W. Chorske, senior vice-president of PE's Data Systems Group. Representatives from the company's Technical Systems Division and Business Systems Division will round out the speaker program.

New to the agenda this year will be a number of beginning and advanced tutorial sessions designed to educate users on successful applications of PE-supported software.

The registration fee for the three-day meeting is $125. PE is located at 2 Crescent Place, Oceanport, N.J. 07757.

Survey Details MVS Sites' Use of Planning

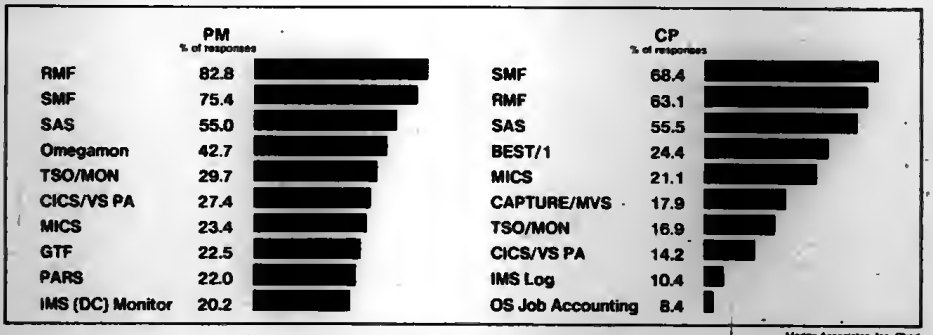
By Lois Paul
CW Staff

VIENNA, Va. — Nearly half — 48% — of the 431 IBM installations responding to a survey reported they do not have formal mechanisms for handling performance management and capacity planning functions.

This is one finding detailed in the final report on the "MVS Performance Management and Capacity Planning Survey." The survey was launched in May 1982 by Morino Associates, Inc. here to gather information about how the MVS community is addressing performance management and capacity management issues. The installations polled reported 1,216 CPUs installed, 89% of which are IBM mainframes.

For purposes of the survey, a "formal" organization was defined as an established entity whose sole responsibility is performance management or capacity planning. The survey found that approximately 38% of the 431 participants have a formal performance management organization, compared with 45% that have formal capacity planning efforts.

In the installations that reported no formal performance management and capacity management functions, systems programming does the performance management work for 91% and the capacity planning work for 75%. The survey also found that for four basic service categories — batch, IBM TSO, CICS and IMS — 62% to 73% of all participants have established service objectives only. However, only 22% to 32% have both service objectives and agreements.



Top 10 Products and Facilities in Primary Use

Three Most-Used Products

IBM's Resource Management Facility, System Management Facility and SAS Institute, Inc.'s SAS were listed by the survey participants as the three most-used products and facilities in their installations for performance management and capacity planning (see chart).

Of the 1,238 staff respondents to the survey, 41.6% reported they are assigned to both performance management and capacity planning, 35.9% to performance management only and 22.5% to capacity planning. In terms of their backgrounds, the survey found they average 2.7 MVS internals courses and 2.5 courses in statistics.

Systems, programming, operations and applications programming — in that order — were their top three experience areas. On average, they have more experience in communications (3.8 years) than performance (3 years) and capacity (2.7 years).

Within the installations that have formal performance management or capacity planning functions, 23% of the capacity planning and 20% of the performance management organizations report at the director level. On average, these formal organizations have been in existence three to three-and-a-half years. The median age for formal capacity planning organizations is two years.

Only 43% of the formal performance management organizations reported having standard procedures for problem identification, tracking or resolution.

Ninety-two percent of all participants have attempted system tuning and received the greatest benefit from it of the eight potential changes to installations listed in the survey. They cited the addition of direct-access storage devices, main storage and operating system upgrades as the top three changes both to improve performance and to increase capacity for all installations.

Both performance management and capacity planning organizations said their top three problems, in the same order, are management, budgeting and staffing and training.

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DP Crime Bill Protecting Small Firms Introduced

By Jake Kirchner
CW Washington Bureau

WASHINGTON, D.C. — Computer crime legislation aimed at protecting small businesses but, its sponsor hopes, applicable to computer security problems in general has been introduced in Congress.

Proposed late last month by Rep. Ron Wyden (D-Ore.), the Small Business Computer Crime Prevention Act would "provide our small businesses with basic information about the unique threat computer crime poses to these businesses and will aid them in the development of safeguards that will reduce the likelihood that they will be victimized by this new form of criminal behavior," Wyden said.

The legislation would direct the Small Business Administration (SBA) to create a special task force whose members would include representatives of SBA, the Department of Justice, the Department of Defense and the National Bureau of Standards' (NBS) Institute for Computer Science and Technology.

The purpose of the task force, which would report back to the president and Congress within three years and then go out of existence, would be to:

- Define the nature and scope of computer crimes against small businesses.
- Provide estimates of the cost per year of this crime.
- Ascertain the effectiveness of state legislation and available security equipment in preventing this crime.
- Work with NBS to develop guidelines for small businesses to evaluate their computer security.

In addition, the bill would mandate SBA creation of a clearinghouse for information on both computer crime against small business and computer security.

In a statement issued when the bill was introduced, Wyden said of "the burgeoning underground industry of computer crime" that "newspaper headlines about computer abuses of government, academia and private sector computer systems provide us with virtually no substantive background on this complicated problem.

"When asked which systems are most vulnerable, I am reminded of the convicted bank robber Willie 'The Actor' Sutton's remark about why he robbed banks: . . . 'That is where the money is.' Likewise, it is safe to say that computer crimes occur where the information is," Wyden said.

A congressional researcher who worked with Wyden on the legislation said the bill takes an educational approach rather than a criminal justice approach because "we have no real evidence on how [computer crime] impacts on various segments of society . . . Nobody is really coming up with empirical data on what is actually happening out there."

DP Exec Makes Congress Debut

WASHINGTON, D.C. — Discoursing on "a relatively simple subject" — the information age and "its implications for our society and our globe" — Frank R. Lautenberg, former DP industry executive and now Democratic senator from New Jersey, made his maiden speech in Congress to a nearly empty Senate chamber last week.

"This nation can ride the wave of the information age or it can be swamped by it," Lautenberg said. Until his election to Congress last fall, Lautenberg was chairman of Automatic Data Processing, Inc. The freshman legislator said issues of equity and opportunity in the coming decades are "issues I hope to address in the Senate.

"In a nation that is plugged into computers, questions of success and failure may become questions of who is on-line and who is off-line. In an economy where technology will dominate our future, how do we cope with our businesses, people and places still tied to the past?" he asked.

Expressing the fear that the rapid automation of numerous aspects of U.S. society might exacerbate existing social disparities, Lautenberg said that "in our efforts to seize the best the new age has to offer, we must not ignore the call of our conscience to enaure that we go forward together as a united people sharing the potential of this new age.

"The capacity to use and work with computers is becoming essential — almost as essential as being able to read and write clearly," Lautenberg said, adding that the federal role must ensure equal opportunity in education.

He explained that "in an age that demands computer literacy, a school without a computer is like a school without a library."

In addition, he said, "we face other issues of equity. Telecommunications networks will be the new infraatructure: satellite networks to conquer the physical isolation of rural communities; networks that link computers and businesses in a national web; networks that channel more information, at faster apeeds than ever before. Who will be connected and who will not?"

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Micrographics Now in State of Transition

(Continued from Page 1)

being an industry based largely on microfilm storage of records to one based more upon microfiche storage. This transition was highlighted by a push for greater reduction of stored documents on the order of 48 times to minimize the amount of costly office space consumed by paper record storage.

Paralleling this film-to-fiche transition was the development of computer-aided retrieval (CAR) and automated document storage and retrieval (Adstar) systems by such industry giants as Bell & Howell Co., Eastman Kodak Co., 3M Corp. and Xerox Corp. These and dozens of other vendors sold micrographics products that were largely stand-alone offerings, such as optical scanners, readers and cameras.

Office Automation Boom

But the late 1970s also ushered in the office automation boom, of which the micrographics industry involuntarily found itself an integral part. According to Dr. Gerry Walter, executive director of research and development at Planning Research Corp., a micrographics systems integrator and research consultant, "The industry suddenly saw itself in the business of storing and retrieving human-readable information, not in the business of selling stand-alone micrographics equipment only. For some manufacturers, this is still news."

Today the industry is facing sweeping technological change that in some ways threatens to obliterate its traditional microfiche and microfilm roots. Within 10 to 15 years, the ability to store and recreate source documents digitally will be available cheaply enough to render all but the most low-cost microfilm and microfiche applications obsolete, so say many industry analysts.

The micrographics end users, too, are changing. Robert Williams, president of Cohasset Associates, a Chicago-based micrographics consulting firm, said corporate management traditionally treated the micrographics department as a "personnel parking lot" where marginally skilled employees were assigned. But as more sophisticated equipment finds its way into the department, workers with more technical and business acumen have been assigned there.

Industry Spotlight

Meanwhile, end-user needs for on-site document storage are growing in quantum leaps. The NMA estimates that only about 15% of the trillions of documents kept as permanent records are stored on film, fiche or disk; the remainder is stored in file cabinets. Some quarter-billion documents and images are added daily to these files, thus making manual store and search methods increasingly more expensive.

As the micrographics industry changes, are the product vendors responding accordingly?

"It hasn't been easy for the vendors to perceive what the users want, particularly with the out-of-sight, out-of-mind attitude some management still has toward micrographics," Williams said. "They serve a remarkably broad range of users, from engineers to bankers to medical personnel.

Basic Solutions Sought

"On the other hand, vendors are trying to put forth basic solutions they know will make them money," Williams continued. "One could argue that at times they become a solution in search of a problem ... But they certainly have solved more problems than they've created."

Planning Research's Walter said that the industry's CAR offerings are "still very much labor-intensive ... with users spending more time retrieving the images than absorbing the information. The whole user community is really quite dissatisfied with the state of the art in this area. They're looking for truly automated units, and the vendors have given them something else entirely."

O. Gordon Banks, the NMA's executive director, said the rapidly decreasing emphasis on stand-alone micrographics systems and the rapid pace of technological change have kept vendors guessing what users want.

"Micrographics will increasingly become an integral part of other, larger office automation systems, and it is system integration that users truly want," Banks said. "The computer is the moving force in office automation, and we need to be tightly coupled to that service delivery medium. We are an industry absolutely in transition."

Vendors Agree Future of Micrographics Belongs to Optical Disk Technology

By Bill Laberis
CW Staff

There is little question that the future of micrographics belongs in great part to digital storage techniques, in particular to optical disk technology.

The ability to store voluminous quantities of documents, forms and records on the compact disks and then to center the disks in a network where their contents can be examined and reproduced on a variety of media will continue to have a multi-billion dollar allure for banks, large law offices and libraries, to mention a few users.

Although few vendors currently offer commercially available optical disk systems, the race for the roses in the optical disk market is heated, particularly in the market for erasable optical disks. One company, Matsushita Electric Industrial Co., Ltd. of Japan, announced in April a prototype of the first erasable optical disk. The company's Optical Document File System records 10,000 letter-size documents on a single, 8-in. disk.

But last month, the company claiming to have patented the laser process that enables the disk to be erased and reburned, Energy Conversion Devices, Inc., filed suit against Matsushita, charging the company with patent infringement and seeking to enjoin Matsushita from marketing or exhibiting its erasable disk offering. While it never marketed its laser memory system, Energy Conversion has granted non-exclusive licenses to several other companies, including IBM.

The immediate future of commercially available optical disk systems was further clouded in April when both Eastman Kodak Co. and 3M Co. announced they would not offer the systems until the mid-1980s [CW, April 18]. The companies cited the networking limitations of optical disk devices and announced instead that they would offer "bridge" or intermediate systems to transmit electronically microfilm images.

Research Continues

Nonetheless, research and development into optical disk technology is continuing apace around the world, as various market studies have claimed the optical disk market will be a very lucrative one, especially as the technology sends hardware costs into a downward spiral.

Edward S. Rothchild, publisher of the San Francisco-based "Optical Memory Newsletter," predicted that the hardware costs of optical disk document storage systems will plummet dramatically throughout the decade, to the point where film-based document storage systems will become largely obsolete. As one example of optical disk storage capabilities, Rothchild said Eastman Kodak will soon release its most densely packed 14-in. disk on which users can store the images of 100,000 pages of documentation on one side.

Moreover, Rothchild said, access times for document retrieval in optical-based systems is greatly improving, with access times in the 50 msec range soon available.

However, Rothchild also pointed to some hurdles vendors will have to clear to make the technology broadly available. As one example, he said work is just beginning on solving the problems associated with turning disk-stored images in many fonts into Ascii data streams.

In addition, the Japanese vendors, among the most active in the optical storage market, are marketing systems supporting "clumsy software," he said. The Japanese systems also do not now process the content of documents stored in a way that permits an Ascii search of the content.

Doubts About Availability

Gerry Walter, executive director of research and development at Planning Research Corp. in McLean, Va., expressed serious doubts that optical disk-based document storage systems will be widely available in this decade. "When human-readable images are digitized, they must be read back to high-resolution CRTs, which are now very expensive and not all that good," he said.

Walter added that the optical disk offerings will continue to be plagued by networking limitations due to inadequate broadband communications links.

"The reason most users look at optical and video disks like a Messiah is that they are thoroughly dissatisfied with the computer-aided retrieval systems being offered them now," Walter said. "There is nothing really wrong with the disks themselves. But users have to remember that they are only one small part of the whole storage and retrieval system," he added.

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SAMPLER OF AUTOMATED DOCUMENT STORAGE AND RETRIEVAL AND COMPUTER-ASSISTED RETRIEVAL SYSTEMS

Company	Model	Microforms Stored Per Module	Degree of Automation	Coding Scheme	On-Line Display?	On-Line Printer?	Price*
Access Corp.	System M	Aperture cards (160,000) Jackets (130,000) Standard fiche (200,000) Updatable fiche (100,000)	Computer operable Automatic infile — random Automatic retrieval — automatic (unattended) delivery Automatic file audit Browsing capability Infile buffer One to 30 modules per system	Microforms mechanically adapted	No	No	$92,400 to $231,500
Bell & Howell Co.	Data Search System 1000	Off-line autoload cassettes, 16-mm open reels and cartridges	System includes data entry planetary camera, data terminal and Syncro-Search reader-printer. Camera and data terminal are interfaced so that microfilming and indexing are combined into one function. The terminal controls the system's I/O, accepting indexed information at filming and displaying the requested information at retrieval.	Syncro Mark Blip — 17-digit index display and placement on film above image	11- by 11-in screen; zoom 17-34X lens	Full-size prints — electrophotographic	$39,700
Eastman Kodak Co.	KAR 4000 Information System	Off-line 16-mm cartridges	An on-line computer printer is included with the basic system to generate data based reports. The system is available in six different models ranging in memory capacity from 30M to 120M bytes. The CPU's main memory ranges from 128K to 512K bytes. Each model is upgradable as necessary up to one of three "800 series" models, each capable of supporting up to eight CRT terminals.	Not applicable	Not applicable	Dry photothermographic paper	$75,000
Icot Corp.	M-360C Reader-Copier	Ultrastrip cartridge — 50 ultrastrips of 2,000 images each	Application-oriented keyboards available; arranged for computer operation; automatic centering of screen image; browsing capability; high file integrity (microforms contained within retrieval unit); positive screen image; flexible system operation; used as stand-alone, local computer control or remote to computer, interconnected via telephone lines; printer is included	Not applicable	215X, 13- by 13-in. screen	215X, 8½ by 11 in. to 11 by 12 in.; wet chemical printout	$23,000
Infodetics Corp.	410	Aperture cards (200,000)	Completely automated, closed loop, storage and retrieval of aperture cards; interfaceable to printer-enlargers, card-duplicators and closed-circuit TV monitoring; up to 64 modules can be interconnected via CPU interface.	Edge-notched cards	Optional; zoom magnifications to 200X	Optional	$1 million to $6 million
Ragen Information Systems, Inc.	95	Ragen cartridges — 300 cartridges per unit, 4,000 images per cartridge	Computer operated, fully automated, composed of three expandable, modular units, a data capture station that captures digital and graphic data from source documents, a data management station that controls all input routines, assigns systems addresses and cross-references, data access terminal automatic viewing of pages in any operator-selected sequence; security control requires password entry; CRT display of relative documents, IDs allowing sort refinements or sequencing	Blip code	Full display	Dry silver	$40,000
Retrix Systems	A-5	Aperture cards, microfiche, 10-pocket carriers and jackets 20,000 in 2,000	Random storage, semiautomatic; uses six-digit carrier selector Coding Scheme.	Six-digit notched carriers	Not applicable	Not applicable	$11,000
Russ Bassett Co.	MRL6 Retrix System	Microfiche and jackets 12,000, six trays at 2,000 per tray	Random storage, semiautomatic; search uses six-digit carrier.	Six-digit notched fiche carrier	Not applicable	Not applicable	$10,000
3M Co.	Micropoint II	Not applicable	Used with 3M EF8000 Page Search Reader-Printer and 3M EF5000 Camera to permit random filming and automatic indexing of documents; file management system that stores up to two million characters of index information on two on-line 8-in. diskettes, one or more remote video display terminals that access the main unit's disk drives can be added to the system, security password available; index entries of 40 characters in up to 10 fields; two field "fast search" options available.	Blip code	Video display: 12-in. diagonal screen with reverse video and blinking, displays 24 lines of 80 characters each	Uses 3M's EF6000	$17,900

*Prices quoted are for typical or minimum configurations, as many systems are modular

Source: National Micrographics Association

First User of Xerox Optical Disk System No Surprise

By Bill Laberis
CW Staff

WASHINGTON, D.C. — As one industry analyst recently pointed out, because "optical disk technology will have its most immediate appeal where cost is not as critical as the application, like in the government," it is not surprising that the U.S. Library of Congress is the first user of Xerox Corp.'s digital delivery system using optical disk technology.

"The system we're putting up now will truly revolutionize our response time in terms of getting orders out the door," David Gray Remington, director of the Library's Cataloging Distribution Service, explained. Remington's office oversees the collection, storage and processing of requests for more than seven million master catalog cards printed in 30 languages. The number of new card entries grows by 250,000 each year.

Industry Spotlight

Remington's staff is currently scanning the library-standard, 3-in. by 5-in. cards onto optical disks, each of which can store about 200,000 cards. For the past several years, the card information had been retrieved from 300M-byte magnetic disk packs. The optical disk system ultimately will replace the football-field-long rows of card files that now contain the hard-copy documents. "We will be able to do in about five working days what took us weeks to do manually — and with much better quality of reproduction of the stored images," Remington said.

"You must consider the nature of the material we're reproducing, which comes in languages like Chinese, Korean and Kurdish. The image we reproduce, even of these complex characters, is remarkable," Remington added.

Remington's staff uses a Digital Equipment Corp. PDP-11/70 minicomputer to process and manage input and a PDP-11/34 mini to manage its retrieval system. The system software was designed by Xerox, which also custom-designed the terminal and page scanners used by the library.

Another division within the Library of Congress is about to launch a demonstration project to store and recreate the library's massive periodical collection using the disk technology. This system, designed by Integrated Automation, Inc. of Berkeley, Calif., will feature what one library official dubbed "near-line access," whereby terminal commands will be used to retrieve optical disks, read an article stored there onto magnetic media, then release the optical disk for the next query, all in about 10 seconds. The article can then be reproduced in hard or soft copy.

Remington said such a system may eventually make it possible for libraries to receive journals and periodicals in digital form, rather than having to scan printed copy into the retrieval system. However, Remington added that such electronic delivery of periodical information must first address copyright issues, as well as magazine advertisers' desire to have their ads prominently displayed in hard-copy form.

"The whole idea of a page is really obsolete when you talk about electronic publishing," Remington maintained.

Report Claims No True Micro DBMS Yet Exists

By Paul Gillin
CW Staff

SAN JOSE, Calif. — Data base management systems (DBMS) are a potentially explosive force in microcomputing, but no true micro DBMS yet exists, according to a report from Strategic, Inc. here.

While various pieces of a DBMS are available in the micro market, no package combines all the essential elements, the report stated.

The study defined a DBMS as a uniform data storage and retrieval system in which no program has to manage its own files; only one copy of any information is needed; security requirements can be uniformly enforced; and data is accessible to new programs without file conversions or other special programming.

Apple Computer, Inc.'s Lisa and Visicorp's Vision are precursors of the workstation of the future, the study noted. Data base functions are essential parts of both systems. The report also called Ashton-Tate's Dbase II significant because it is supposedly the only data base product to have spawned a line of application, utility and extension products devoted to it.

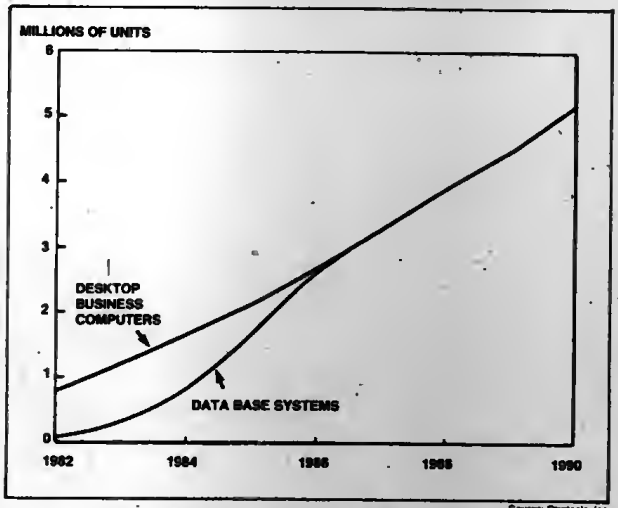
The micro DBMS of the future will integrate word processing, accounting, spreadsheet analysis, business graphics and other programs sharing the same command language and allowing files to be shared by a common format and access method, the report continued. Data base sales will equal business microcomputer sales in three years, when they will become standard equipment on most micros.

The demand for standards will lead to the evolution of a single data base design, the report predicted, and that design undoubtedly will be relational. Relational DBMS suffer from inefficiency on mainframes but are ideal for small files on micros. Niche markets will remain for non-standard designs, offering higher performance or other advantages to compensate for their lack of conformance to the standard.

Standard DBMS Not Sufficient

However, standard relational DBMS will not be enough to satisfy users who are seeking total solutions, according to Strategic. With microcomputers becoming as common as typewriters in most companies within a few years, users will want networking software that allows concurrent access to peripherals and shared DBMS. It will become increasingly necessary to permit multiple simultaneous access without risk of storing or retrieving inconsistent data or damaging files, the report stated.

A partial solution is to run the same DBMS software on different systems so that data can be downloaded for local manipulation. However, timeliness and accuracy will remain a problem unless a complete distributed processing system can be built, the study noted.



Business Computer and Data Base Annual Sales

The report also analyzed a variety of data base systems characterized as providing "partial solutions." They include: Ashton-Tate's Dbase II; Uveon Computer Systems, Inc.'s Optimum; a variety of relational DBMS under Unix; Pick and Associates, Inc.'s Pick operating system; Perfect Software, Inc.'s word processing, spreadsheet analysis and data management package; Context Management Systems, Inc.'s Context MBA; and Visicorp's Vision.

The Pick operating system could become a major force, the report concluded, because it includes a relational data base within the operating system.

The 222-page report, entitled "Micro DBMS — The Universal Applications," is available for $950 from Strategic, Inc., P.O. Box 9747, San Jose, Calif. 95157.

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Oregon Builds Data Base In Quest for New Business

By Paul Gillin
CW Staff

SALEM, Ore. — Oregon has upped the ante in the competition between states trying to lure new business within its borders. Companies that are considering expansion into the Beaver State can now run a computer match between their building requirements and a data base of nearly 1,100 available development sites.

The Industrial Land Inventory System is the first stage of the Oregon Business Information System (Orbis), which the state's Department of Economic Development hopes will be an extensive listing of business facilities available statewide. Orbis was instituted as part of Gov. Victor Atiyeh's 1982 Economic Recovery Plan. Although Oregon suffered less than most states during the recession, the state is still looking "to diversify its economic base," according to Richard Carson, program executive for Orbis.

The system categorizes sites zoned for industrial development under the major categories of location, transportation, utilities and community characteristics. A total of 30 subcategories are included, such as terrain, population and proximity to educational institutions along with addresses and telephone numbers for the property owner, listing agent and local economic development office.

The categories were formulated with substantial input from realtors, developers and major companies in Oregon, Carson noted. Listings are checked for accuracy, and the data base is updated on a six-month cycle.

To perform a match potential, developers fill out a questionnaire rating the categories in terms of their relative importance to the business.

The responses are entered on either an IBM 3270 dedicated terminal, connected to the IBM 3033 mainframe in the state's Data Systems Division, or on a Televideo, Inc. 925 portable terminal, incorporating a Ven-Tel Corp. 1200 bit/sec modem. "We provide the sites that receive the top total scores and are the best candidates for the facility," Carson said.

Costs Less Than Estimated

The land inventory system was developed over four months by programmers in the Data Systems Division using Applied Data Research, Inc.'s Roscoe remote job entry system. The project cost less than $40,000, or about one-third less than what was budgeted, according to Ken Foht, systems supervisor in the division. The savings were achieved despite the need to convert from Roscoe to IBM's CICS before implementation.

Once the prospect's criteria are entered, the typical response time is three to five seconds, Foht said. Each inquiry costs about 33 cents.

The list of development sites is the only operational part of Orbis, according to Carson. But the system will soon be expanded to include a data base of available buildings and an on-line demographic breakdown of various regions of the state. Orbis also may be expanded to include information on operations costs in different regions of the state, incorporating factors like wages, labor pools and taxes.

No new development projects have yet been attributed to Orbis, but the department has processed more than 70 site location requests since the information system was instituted last December, Carson said. "I have got some really encouraging comments from industry and other states," he added.

The Oregon Economic Development Department is located at 155 Cottage St. N.E., Salem, Ore. 97310.

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Banks 'Leaving Doors Wide Open' to Disastrous

By Paul Gillin
CW Staff

MIAMI — Bank DP operations are leaving themselves open to potentially devastating computer crimes — and the situation is getting worse rather than better, according to a computer crime expert.

"You wouldn't leave your front door wide open when you go on vacation, but today, banks are leaving their doors wide open by not protecting their software and systems," said M. Arthur Gillis, president of Computer Based Solutions, Inc. of Atlanta in a telephone interview from Miami.

Deregulation of the banking industry has played havoc with DP security, Gillis said. "In the past three years, the banking industry has been hit worse than any other in terms of change. Because of other priorities that are very demanding, this whole business is doing very little forward thinking."

The demand for programmers with specialized experience in banking systems is so high that DP managers in banks are likely to gloss over a potential employee's background in favor of expedience. "When a programmer has that critical thing that you're so desperate for, who is going to worry about his integrity?"

Isolation of DP

The problem is compounded by the relative isolation of DP from the rest of the bank organization. "I have never met a personnel manager and a DP manager who could see eye to eye," Gillis noted.

"The typical DP manager isn't concerned about integrity. He needs somebody to work on his Hogan [Systems, Inc.] DDA [demand deposit accounting]," he said. "But the personnel function has a legitimate role, if only to do these background checks."

He said most programmers caught defrauding their employers are repeat offenders.

A more perplexing problem, according to Gillis, is high turnover and the relatively small number of packaged applications that are available for banking. Because bank programmers move so freely, many have experience on several different packages and thus the knowledge to break into them. "How would you feel if you knew there were only 200 unique combinations to every vault in all the banks around the country?" Gillis asked.

You cannot prevent your employees from learning the inner workings of your software or from leaving, he added, but you can "build walls around the system. Ultimately, all these solutions boil down to access. They can know how something works, but if they cannot penetrate the system, what good is that knowledge going to do them?"

The use of security software, such as Cambridge Systems Group's ACF2 and EDS Software Products' Security Access Controller, is the best possible solution, he advised. However, "it takes a lot of work to implement the system because it's always integrated with the applications," he said. "That's up to 35 applications at a fully automated bank."

Another measure is to establish a DP security department to perform regular system audits, a process that is done rarely, if at all, in many banks. "Believe it or not, most banks don't know what a data security department should do," Gillis said.

Security Problem

The security problem is especially pronounced in smaller banks that only recently brought their processing in-house. In most cases, "they only learned the first

'This Is Our Conductor and Our Semi-conductor.'

Computer Crimes, DP Security Expert Warns

step, which is how to run the system. They didn't learn how to secure the system."

These institutions are vulnerable because "one [DP] guy does 15 jobs. If that man wants to do something, he could do it, and no one would stop him."

The banks are not necessarily to blame for the oversight, he added. "My personal opinion is that [regulating] agencies are extremely lax in how they allow bankers to run their own computers," he commented. "If a banker isn't responsible enough to recognize that he needs to secure his own system, someone has to tell him, and that's the job of the [Federal Deposit Insurance Corp.] and the controller. There has to be a DP audit function in those tiny banks."

Beware of Modern-Day Bonnies and Clydes

MIAMI — Compared with the damage a dishonest programmer can inflict upon a bank, Bonnie and Clyde were relative angels.

"At least when Bonnie and Clyde ripped you off, you knew it right away," according to M. Arthur Gillis, president of Computer Based Solutions, Inc. of Atlanta. "Now Bonnie and Clyde may be on your payroll, and they can rip you off for millions in a few nsecs using the ergonomically designed workstation you so thoughtfully provided them."

Personnel problems are a peril to DP security at most banks, but few DP managers are willing or able to handle them, Gillis said in a recent telephone interview. "In all the jobs I've done to test the security of bank DP operations, I have never been hired by the DP manager. I have always been hired by the chief executive officer," he said.

Because of their applications backlog, few DP managers take the time to screen job applicants carefully, he noted.

But other less apparent problems exist. "DP is still treated as a stepchild, usually in a separate facility which tends to break down any feeling of belonging," he explained. "But DPers are still governed by policies designed by the bank for bankers. They are not a very happy lot."

In order to improve working conditions for their employees, DP managers need to "start acting more like managers rather than mysterious technicians," he said. "Too often the DP guy in the bank is miles apart from top management. And don't tell me it is getting better," he added.

Managers also tend to give their systems programmers uncontrolled access to the entire system at any time of the day. "You know how hard it is to keep these people, and you certainly do not want to offend them by placing rules on how they do their job," Gillis said. But, he added, a disgruntled systems programmer can manipulate accounts practically at will.

"It is a problem of managing people because you can't afford to double up on all your teams," he said. "Somebody has got to be close enough to those people to provide an atmosphere of trust. Call in a human relations expert, if necessary."

The nature of the business leads to another problem. "The most important part of the banking day from a DP point of view starts at 7 p.m. and ends at 7 a.m., when all the heavy hitters are home in bed," he noted. "Third shift is lousy — no one wants to work it. It is strictly operations, but some of the biggest errors occur at that time."

Again, Gillis advised seeking the advice of a personnel specialist. "You have to be extremely sensitive in picking people for that job."

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Another example of the amazing value the 5420 represents, is that it lets you change from an 80 to 132 column mode to put more data—including accounting spreadsheets—on display.

In addition to eight system defined function keys that can be down-line loaded from a host, you get eight non-volatile user defined function keys that can be entered locally. All 16 function keys are easily associated with screen labels. When the function of these keys is changed, the screen labels can change right along with them. And a variety of local terminal features can be accessed through the screen labeled keys.

As if that's not enough, there's an English menu for fast set up when optioning. The 5420 is also buffered so you can send a character, line or page of data at a time. Plus, you get character, word and line insert/delete. A bi-directional, buffered EIA printer port is standard.

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Ball Park Strategy Made Easy With Sabermetric Predictions

Successfully stolen bases are guaranteed crowd-pleasers, but do they aid or impede a ball club's climb to the pennant?

Sabermetrics, or the mathematical massaging of baseball statistics, can provide some answers to this question and other questions of strategy.

Primarily using microcomputers running custom-designed programs, sabermetricians have been able to simulate actual game conditions and estimate the probable results of various plays and the value of those results.

Other Findings

Some of their findings include:

- Implementing the sacrifice play will increase the probability of gaining one run, but decrease the probability of producing two to three runs; in other words, it will cost more runs than it creates.
- Base stealers need a success rate of 67% to break even, but they are more likely to cost their teams needed runs.
- By offering fewer intentional walks, two more wins per year are possible.

This sort of information can obviously be particularly useful to teams that steal a lot of bases, walk a lot of batters or rely heavily on the sacrifice play.

Home Plate Moved

In another example, Chicago White Sox fans might notice that home plate in Comiskey Park has been moved up about 8 feet in hopes of producing more home-team homers. Moving home plate was the result of a computer printout charting the path of all of Chisox fly balls hit at home last year.

Manager Tony La Russa is one of the first to apply sabermetrics to his strategic planning in hopes of garnering more wins and capturing the elusive pennant.

Sabermetrics can even be used to analyze the pros and cons of contemplated trades.

For example, a computer graphic produced by the Oakland A's that showed the distance and location of former A's player Tony Armas' ground-ball and fly-ball outs in both the Oakland Coliseum and Boston's Fenway Park indicated that the recently traded Armas is unlikely to blossom into a home-run king at Fenway Park.

In the Heat

And a study done by sabermetrician Craig Wright for the Texas Rangers showed that players who grew up in colder climes do not perform as well as their thinner blooded compatriots in the sweltering heat of Arlington Stadium.

While this particular report is unlikely to result in a purge of all players reared north of the Mason-Dixon line from southern teams, the point, according to Wright, is that via mathematical analysis he can provide hard facts to back a decision that might otherwise be based upon a manager's intuition.

And even if the end result is only an overall gain of a few runs, remember that pennant races have been lost for want of a solitary win.

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Computerized Advice in the Dugout

It's a Whole New Ball Game With Sabermetrics

By Patricia Keefe
CW Staff

There is a runner on first and no outs. The batter steps out of the box and glances toward the dugout. His coach consults the computer operator, then decides against the sacrifice when the computer-generated printout tells him the conventional play is not necessarily the smart one because it will produce fewer runs overall.

Welcome to the age of computerball, where baseball teams, particularly in the American League West, are looking into "sabermetrics," the application of mathematical analysis to baseball.

According to Pete Palmer, a Massachusetts computer programmer who works for Raytheon Data Systems Co. and manipulates data for the Amercian League office in his spare time, the problem with baseball today is that management tends to "minimize failure" by clinging to conventional strategies, many of which are mathematically unsound. "You have more to lose and more to gain" by taking the unorthodox route, according to Palmer.

Palmer and other sabermetricians — so named after the Society of Baseball Research (Sabr) — do more than crunch numbers. They use computers to simulate weather and field conditions, position players and then figure out the probability of X occurring under Y strategy in any ball park on an overcast day, assigning values to their results.

While it is true that in some cases computer printouts do little more than confirm what baseball aficionados have known for years, sabermetrics has succeeded in viewing the grand old game from a new angle, exploding a few strategy myths along the way.

As a result, computer-messaged data, traditionally output for use in the broadcasting booth, is slowly winding its way into the dugout where coaches like Tony La Russa of the Chicago White Sox and Steve Boros of the Oakland A's will use their computer printouts to use their talent more effectively.

The printouts give La Russa and Boros complete fielding, batting and pitching statistics to help them more precisely position players in the field for each batter or to shuffle lineups for each opposing pitcher.

Boros and La Russa use a program called Edge 1,000 on their Apple Computer, Inc. micros. Edge 1,000 was developed by sabermetrician Richard D. Cramer, a biochemist from Philadelphia who designs pharmaceuticals by computer. Other teams, including the Texas Rangers, the San Francisco Giants, the Baltimore Orioles and the Boston Red Sox, have expressed interest in similar programs.

Managers including Whitey Herzog, Dick Williams and Earl Weaver have been keeping such charts for years — either in their heads or through color-coded charts produced manually after each game. However, while managers often guess at connections, sabermetricians can provide the true correlations, according to the Texas Rangers' Craig Wright, the only sabermetrician employed full-time by a major league ball club.

Wright does not use a computer, although he is trying to convince the Rangers that the roughly $120,000 investment he envisions would be worth it. However, he said that the sabermetrician is more important than the computer, which by itself could "lead a team astray."

The usefulness of sabermetrics extends beyond the ball park and has been particularly applicable in contract negotiations, arbitration and the packaging of trades. Sabermetricians have served as consultants to both players and management, providing hard data to help assess the dollar value of an individual player's skills.

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Managers on the Move

JOHN HIGHBARGER has joined Diamond Shamrock of Dallas as director of management information systems (MIS). He will direct all corporate MIS activities.

Highbarger formerly was a senior manager in the management advisory group at Price Waterhouse and Co. His background also includes several years' experience at petroleum industry companies.

Highbarger holds a BBA degree from the University of Texas.

•••

THOMAS E. ALTIERI has been designated senior vice-president of Crum & Forster Corp.'s Information Service Department in Morris Township, N.J. He previously served as vice-president of eastern data processing for Crum & Forster, which provides management and services to the Crum & Forster insurance organization.

Altieri will now have responsibility for corporate systems and methods, rating and writing systems and western data processing. He joined the company in 1971, and he was appointed assistant vice-president in 1975.

Altieri has also been employed by Great American, where he was director of corporate systems, and by Haskins & Sells, where he served as a management consultant.

Altieri earned a B.S. degree from Columbia University.

•••

WILLIAM S. DONELSON and RONALD K. HARDAWAY have been appointed assistant vice-presidents of Ingram Industries, Inc. in Nashville, Tenn.

Donelson has been named assistant vice-president of corporate systems. Before joining Ingram in 1981 as corporate systems coordinator, he worked as a private systems consultant and developer.

In addition to his new responsibilities for management information systems planning at Ingram, Donelson will serve as an adjunct associate professor at Vanderbilt University in the Department of Computer Science.

He graduated from Vanderbilt University with a B.A. degree in business administration. Donelson also received an MBA degree from Case Western Reserve University.

Hardaway, named assistant vice-president of internal audit, joined Ingram as director of internal audit in 1979. Prior to that, he was an audit manager with Peat, Marwick, Mitchell & Co. in Nashville.

Hardaway graduated from Austin Peay State University with a B.S. degree in accounting.

•••

JOHN B. CAMPBELL has been promoted to head of the Corporate Information Services Department at Mitre Corp., a systems engineering firm located in Bedford, Mass. Campbell joined Mitre in 1979 as an associate head of the department.

Before joining Mitre, Campbell held positions as manager of Raytheon Data Systems Co.'s scientific computer center and as manager of information systems analysis and design at General Electric Co.

Campbell, the author of a book titled *How to Manage a Data Processing Department*, earned a B.S. in physics from St. Lawrence University as well as a B.S. and an M.S. in electrical engineering from Columbia University.

•••

JAMES A. SNYDER has been promoted to coordinator of direct marketing systems for Quaker State Oil Refining Corp. in Oil City, Pa. Snyder will be responsible for coordinating data processing activities at Quaker State's direct marketing units throughout the U.S. and Canada, assuring compatibility of systems and equipment and developing new requirements.

(Continued on Page 25)

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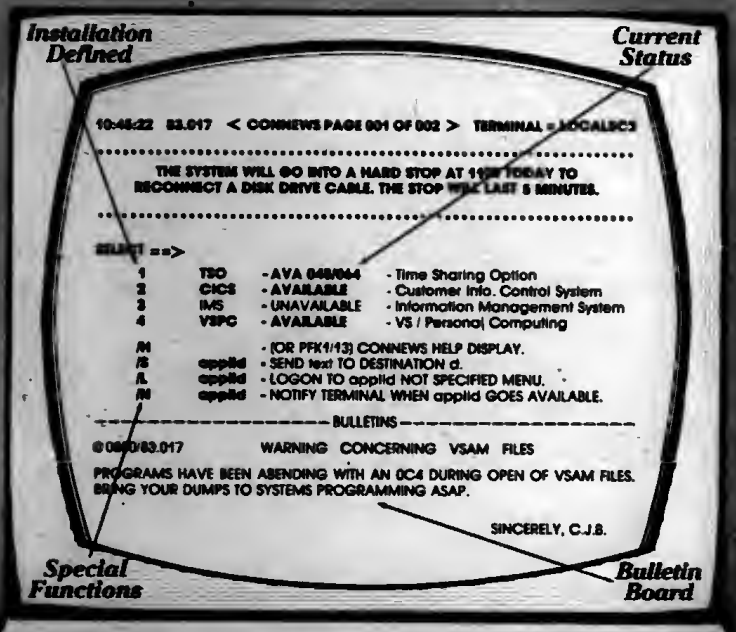

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Eurodata Unveils Guide Covering Communications

LONDON — The fifth edition of the Eurodata Foundation Yearbook, featuring a list of all data and text communications services provided by the 18 telecommunications administrations who are members of the Eurodata Foundation, is available.

The yearbook is designed for communications and DP managers and provides information on users of text communications, Postal Telephone and Telegraph-provided data equipment, international services, leased private circuits and tariff information.

For the first time, the volume will include appendices with information on Japanese and North American data communications tariffs to Europe supplied by carriers such as GTE Telenet Communications Corp., ITT and RCA Corp.

The edition also takes account of organizational and service changes in the UK, France and W. Germany, major tariff changes and the implementation of new public data networks.

The yearbook is priced at $160 and is available from Eurodata Foundation, which is located at Broad St. House, 55 Old Broad St., London EC2M 1RX, England.

William S. Donelson

John B. Campbell

James A. Snyder

Howard Melton

(Continued from Page 24)

Snyder joined the company in 1974 as a programmer and was promoted to senior analyst in 1979.

Earlier, he served in the Navy as an air traffic controller and studied traffic management at Humboldt College and computer programming at the Electronic Computer Programming Institute in Norfolk, Va.

•••

JOHN C. EDWARDS has been elected to the new position of vice-president of information systems for the GATX Corp. in Chicago, which provides transportation equipment, manufactures processing equipment and offers financial services. Edwards will be responsible for the application and use of computers and telecommunications within GATX.

Edwards joined GATX in 1977 as corporate director of information systems. Prior to that, he was vice-president of information systems for Northern Telecom, Inc., director of systems at Polaroid Corp. and manager of systems at the Pratt & Whitney Aircraft Division of United Technologies Corp.

He served in the federal government as assistant to the commissioner for automatic data processing in the U.S Customs Service and as chief of the U.S. delegation to the Customs Corporation Council for International Data Transmission Standards.

Edwards holds an A.B. in economics from Columbia University and attended Georgetown University Law School and George Washington University School of Public Administration.

•••

HOWARD MELTON has been promoted to assistant vice-president of information systems for Wometco Enterprises, Inc. in Miami, a leisure-time company with major business interests in cable television, broadcasting, subscription television, Coca-Cola bottling, automatic vending and entertainment. He is responsible for bottling operations, as well as corporate accounting functions and computer operations.

Melton joined Wometco in 1968 as a programmer/analyst. He then served as a manager of computer operations, was appointed manager of information systems in 1980 and director of data processing in 1981.

He attended Virginia Polytechnic Institute and is a member of the Data Processing Management Association.

•••

Union Pacific and Missouri Pacific Railroads have announced the promotions of the following: GUERDON S. SINES, JOHN L. JORGENSEN, J.A. SHATTUCK, CHARLES P. HUGHES, L. MERILL BRYAN, R.L. BARLEY and J.D. MERRICK.

Sines has been elected vice-president of information and communications systems.

He began his railroad career in 1954 with Southern Pacific Railroad as an assistant engineer in the bureau of transportation research and served as a brakeman, switchman and assistant trainmaster. When he left Southern Pacific in 1966, he was manager of operating data systems.

Sines held computer research and development positions with the New

(Continued on Page 26)

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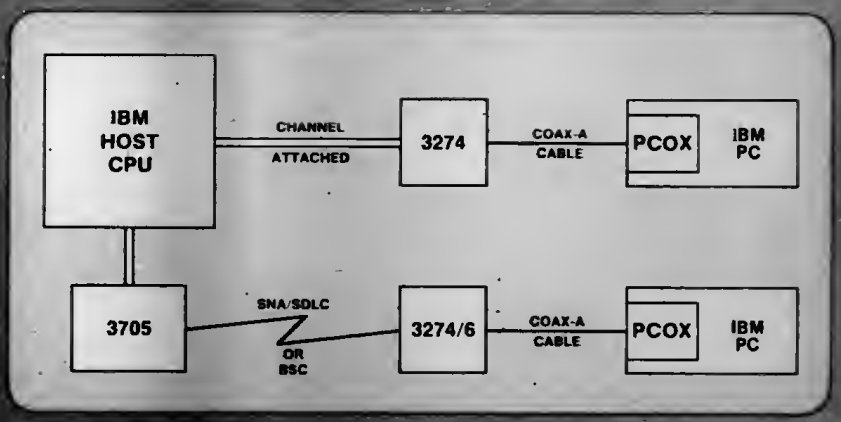

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Gnerdon S. Sines

John L. Jorgensen

J.A. Shattuck

Charles P. Hughes

(Continued from Page 25)

York Central and Penn Central Railroad before joining Missouri Pacific in 1969 as manager of information systems development. In 1970, he became director of the Information and Control Systems Department, and he was promoted to vice-president in 1977.

He graduated from the U.S. Military Academy at West Point with a B.S. degree in military engineering. Sines also attended the Harvard University Advanced Management Program.

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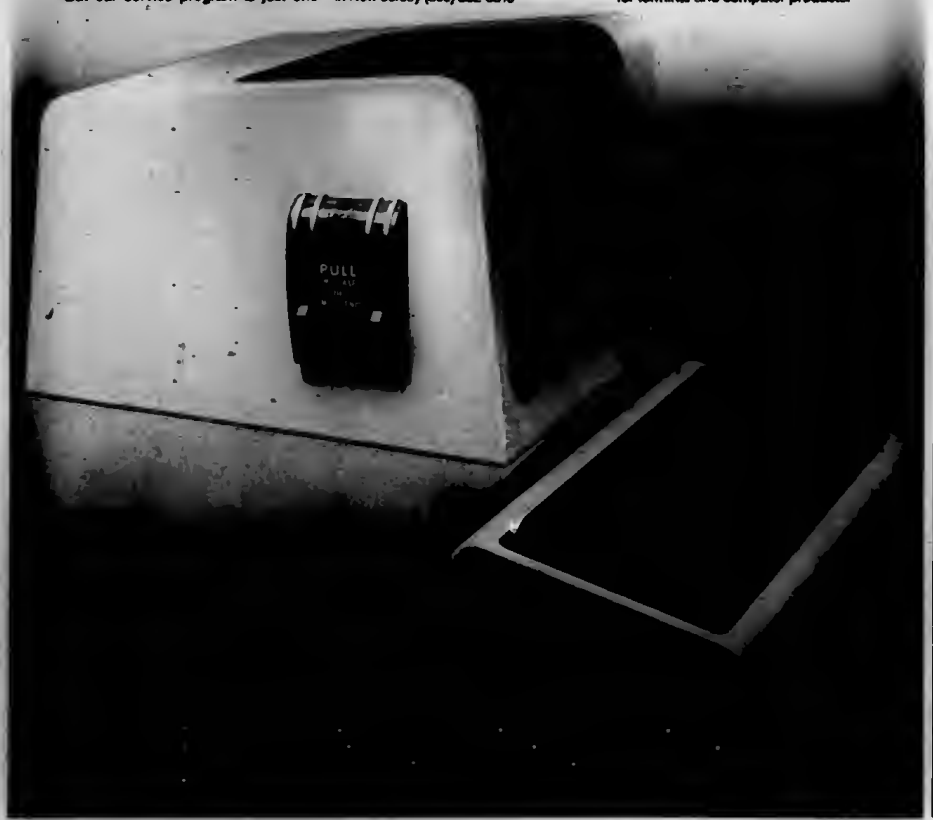


Jorgensen has been named vice-president of computer operations and communications systems. He was formerly vice-president of management information services and communications for Union Pacific.

He joined Union Pacific's accounting department in 1955 after serving as a programmer. He was named systems and method analyst in 1959 and later that year was made project director. In 1966, he became director of electronic data processing research, and he was appointed director of management information services in 1969. He was promoted to vice-president in 1978.

Jorgensen attended the University of Nebraska at Lincoln and Omaha and completed the Harvard program for management development.

Shattuck has been promoted to senior assistant vice-president of information systems. He had been assistant vice-president in the Information and Control Systems Department for Missouri Pacific Railroad since 1981.

Shattuck attended San Jose State University and graduated with a B.S. in industrial management and an MBA in business administration. He worked for Southern Pacific before joining Missouri Pacific in 1970 as assistant manager of systems development. He became assistant director of development and implementation in 1978. He attended the Harvard program for management development.

Hughes has been named assistant vice-president of administration, budgets and training. He formerly served as vice-president of management services at Western Pacific.

Hughes graduated from Manhattan College in Riverdale, N.Y., with a BBA in management. He worked for the New York Central and Penn Central Railroad before joining Western Pacific in 1973 as manager of operations planning. He became superintendent of the Colorado and Wyoming Railroad in 1977. He returned to Western Pacific in 1979 as vice-president.

Bryan has been promoted to assistant vice-president of information systems. He was director of implementation and field systems for Missouri Pacific since 1982. He worked for the Ogden Union Railway and Depot Co. and Southern Pacific before joining Missouri Pacific in 1970 as a computer analyst. He also has been manager of on-line systems development and a consultant in behalf of Missori Pacific to the National Railroad of Mexico.

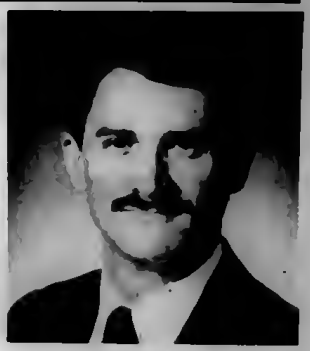
Bryan graduated from Weber State College with a B.A. in liberal arts and an MBA in business administration.

Merrick, promoted to assistant

L. Merill Bryan

R.L. Burley

James D. Merrick



James M. Newman

vice-president of communications systems, had been assistant vice-president of Union Pacific's management information services department since 1982. He joined Union Pacific in 1973 as director of systems research and planning, and in 1975 he became director of computer operations.

He graduated from Creighton University with a B.S. in physics and attended the Harvard program for management development.

•••

JAMES M. NEWMAN has been named director of systems for GTE Automatic Electric, Inc. in Northlake, Ill. In his new position, he will be responsible for planning, development and support for the information management organization.

Newman, who most recently served as director of planning and support for the information management organization, joined GTE Automatic Electric in 1970. From 1975 to 1982, Newman was a part-time teacher of programming languages at Triton College in River Grove, Ill.

He attended Eastern Illinois University and DePaul University, graduating from DePaul in 1974 with a bachelor's degree in mathematics.

•••

SCOTT K. AMBLER has been promoted to director of technology, and GEORGE A. PERERA has been named director of operations in Ryder Truck Rental, Inc.'s management information systems (MIS) department in Miami.

Ambler, formerly a group project manager, will be responsible for the design, planning, evaluation and adoption of computer systems hardware and software throughout Ryder Truck Rental. Before joining Ryder in 1978 as an MIS project manager, he was employed by Exxon Corp. and Philco-Ford Corp.

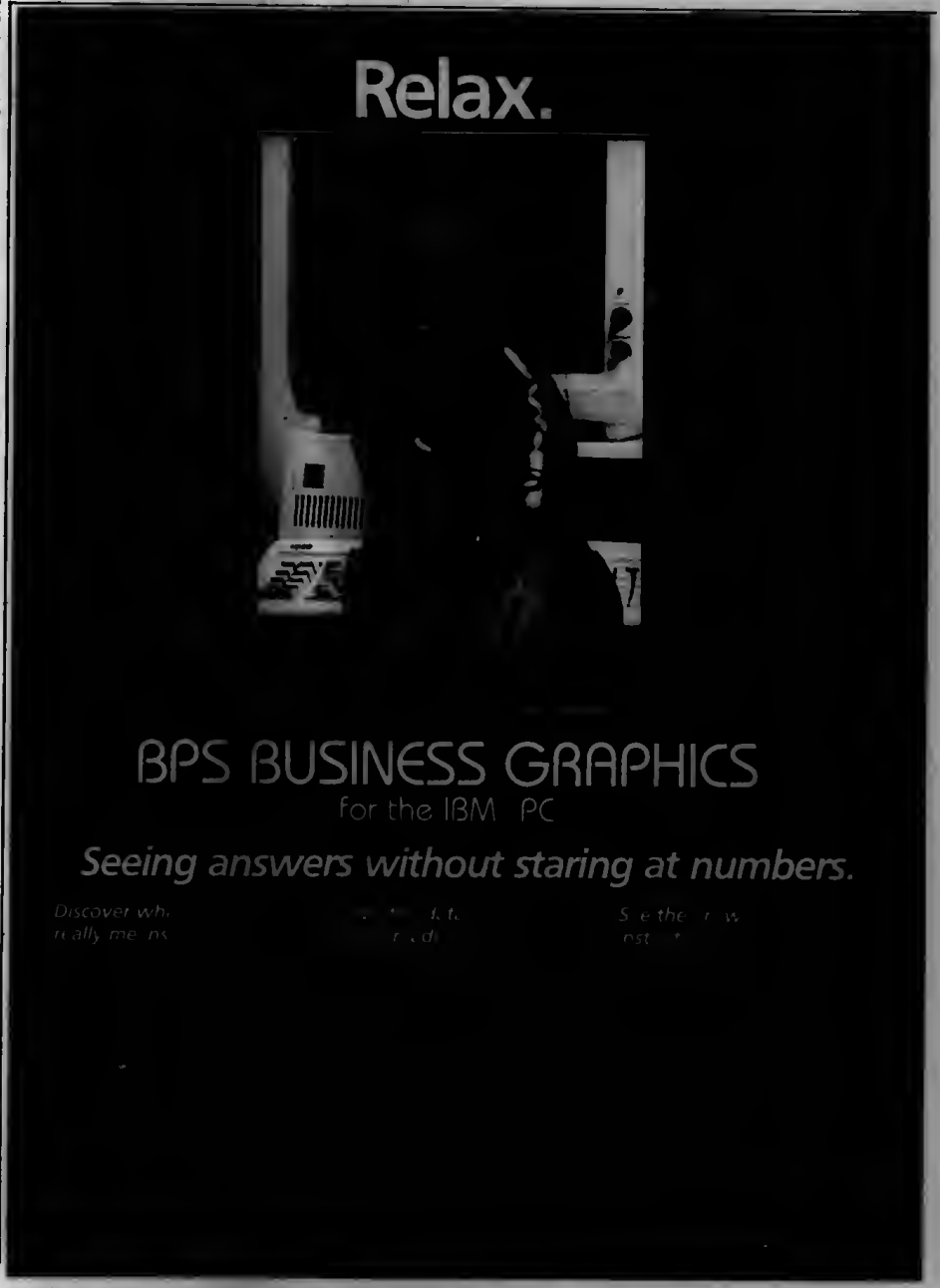
Ambler holds a B.S. in engineering and applied science from Yale University and an MBA degree from the University of Pennsylvania's Wharton School.

Perera will be responsible for computer system hardware acquisitions and for planning, organizing and directing activities of Ryder Truck Rental's computer center.

Ferara joined Ryder in 1968 and has held a number of computer and MIS positions with that firm.

Perera holds a B.A.and an M.A. in education and an M.A. degree in languages from the University of Miami.

George A. Perera



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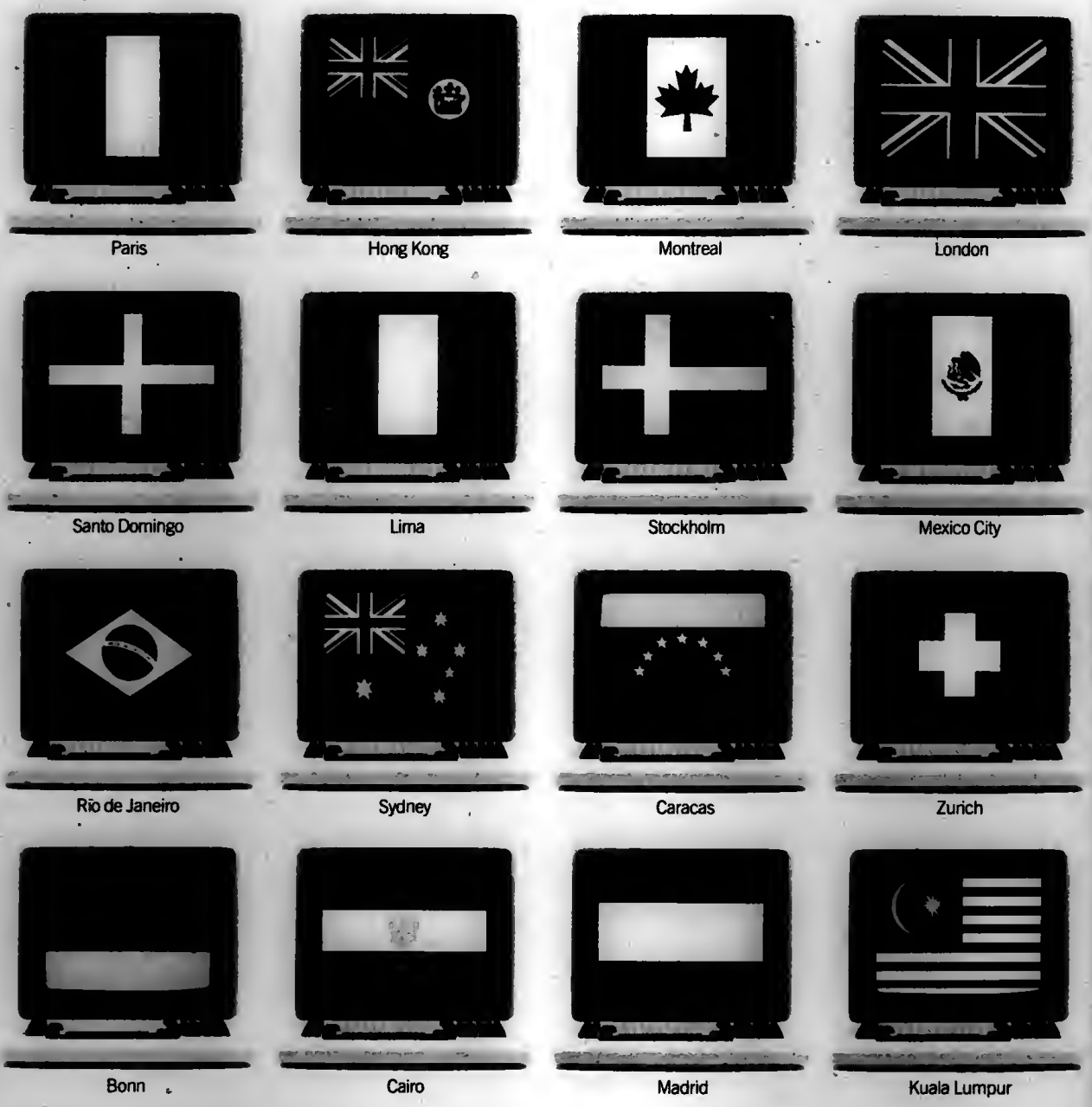

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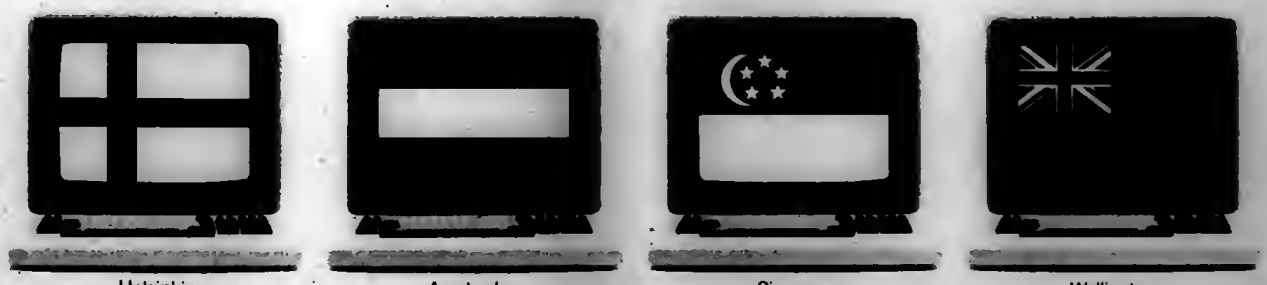

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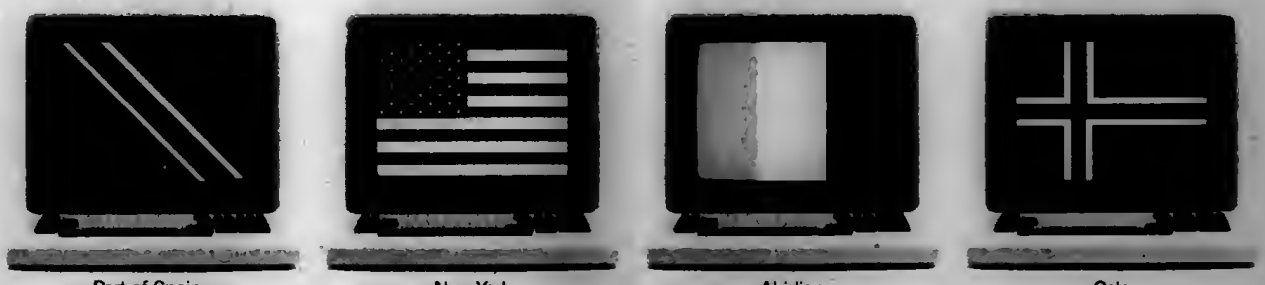

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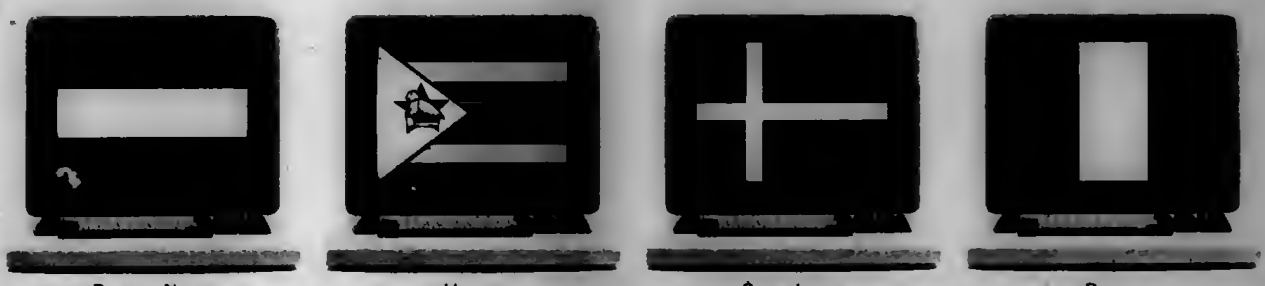

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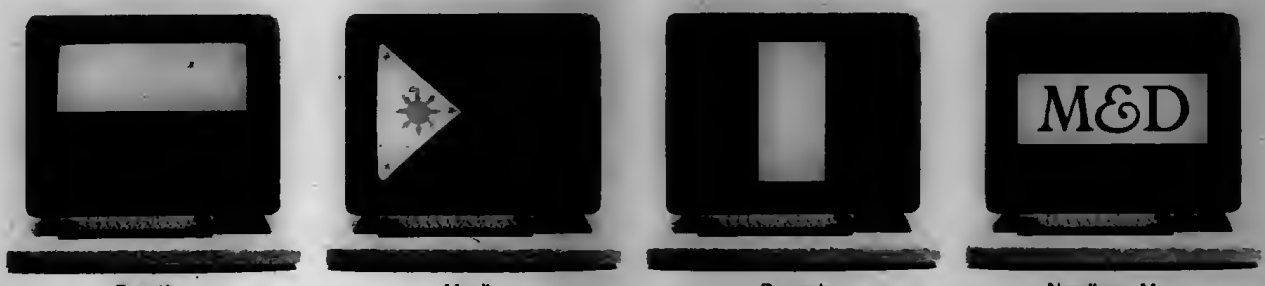

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Financial Services Firm Upgrading DP Facility

By Robert Batt
CW West Coast Bureau

SAN DIEGO, Calif. — Reflecting the trend in financial services, 1983 is turning out to be a transition year for data processing at Imperial Corporation of America.

With a 1982 loss of $61 million on gross revenues of $549 million, the multistate savings and loan holding company is upgrading its DP facilities in an attempt to gain a march on its competitors.

Currently, Imperial, which operates savings and loan associations in California, Colorado and Kansas, employs two IBM 4341 Model 2 systems and a 3031 machine. With the financial services industry oriented toward real-time systems, IBM's CICS is used as an on-line monitor running under the DOS/VSE operating system.

Changes in Store

Big changes, however, are in store for the company this year. "Our single biggest problem is finding adequately skilled staff and providing them with the resources they need to get their jobs done. The challenge is to provide enough horsepower for research and development," Richard Vazquez, vice-president of data processing, maintained.

In an attempt to respond to this challenge, Vazquez plans to switch to IBM 3033 or 3083 processors in the fourth quarter of this year. This will also require converting to an MVS operating system from the current DOS/VSE, running under VM. A team of 40 programmer/analysts is being put together to carry out the work that is expected to take 12 to 14 months.

In the interim, the company plans to use VM to run its operating system on the bigger machines until the conversion to MVS is complete.

In the last two years, Imperial's DP budget has increased by 63%, with average on-line traffic between 275,000 and 360,000 messages a day to 250 branch offices operated by Imperial and client companies. Response time, Vazquez claimed, is under three seconds for 90% of the transactions.

"This industry is so highly dependent on real-time integrated systems that any new service in the branches has to be integrated into the network, requiring very concentrated technology," Vazquez said. Imperial set up a network control center that monitors operations in the field.

Apart from processing power, the company is also placing great stress on updating its office automation facilities.

The company has installed IBM 3600 financial terminals, replacing many of its old Burroughs Corp. TU 1800 series machines. "We received poor field support from Burroughs. We spent a lot of time trying to convince them we had a problem, but to no avail. Since we converted to IBM, that problem has gone away," Vazquez explained.

Imperial also installed IBM 3270 terminals to carry out administrative functions at its headquarters here.

The company now plans to acquire 2,000 of IBM's newly announced 4700 financial terminal systems and is currently testing eight of them in a pilot study. Bulk purchasing is planned to begin in the fourth quarter of this year, and the aim is to replace the 3600 terminal with 4700.

"We want to utilize our transaction processing network so that any device can access any piece of data," Vazquez said. Using the 4700, he claimed, Imperial will have the capability to download data from its CPUs to the terminals.

This, he asserted, will result in the quicker transfer of data from the processors to the terminals and eliminate a number of transactions between the host machine and the peripherals. It will also allow for store-and-forward functions that currently cannot be performed using the 3600, he added.

Vazquez emphasized the business advantages to be accrued from such new technology applications.

SCIENCE/SCOPE

An easily processed version of a heat-resistant plastic should find new high-temperature industrial and commercial applications, as well as promote more use of advanced composites in such aerospace products as aircraft, engines, and supersonic missiles. The new Hughes Aircraft Company polyimide, which withstands temperatures of 600°F for long periods and much higher temperatures for short periods, can be processed in existing equipment. It uses a simple one-step curing process very similar to state-of-the-art epoxies. By comparison, plastics with equivalent strength and heat resistance require complicated and expensive curing procedures. The new material will be produced and marketed under the trade name Thermid® by National Starch and Chemical Corp. of Bridgewater, N.J.

The new AMRAAM missile will be good at evading enemy detection through a clever improvement to its radar system. The improvement, now patent pending, is done simply and with only a little extra hardware. It greatly reduces inaccuracies caused when the missile jumps from one radar frequency to another en route to its target. Frequency hopping makes it extremely difficult for enemy radar-detection equipment to get a fix on the missile. Hughes designed and developed the Advanced Medium-Range Air-to-Air Missile for the U.S. Air Force and Navy.

An advanced antenna farm designed with the aid of a computer will be carried by Intelsat VI communications satellites. The system will provide different kinds of coverage -- beams transmitting to entire hemispheres, "global" beams, focused regional beams, and very narrow spot beams for broadcasting high-speed data. Hundreds of computer patterns were created to predict antenna performance. These studies led to the choice of transmit reflectors 3.2 meters in diameter instead of 4 meters. The larger size offered only slight improvement at the cost of being much heavier, larger, and more complex. Hughes heads the team building Intelsat VI for the International Telecommunications Satellite Organization.

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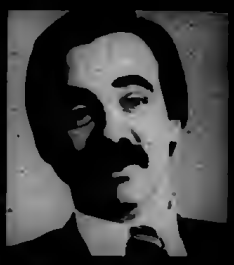

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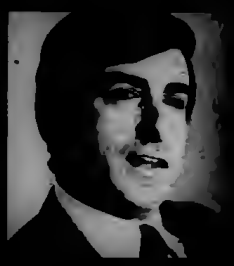


FIRST NH DID.

GE Course Helps Managers Handle Resistance to Tech

By Patricia Keefe
CW Staff

BRIDGEPORT, Conn. — Preparing for the office or factory of the future involves a lot more than productivity plans, equipment installation and operator training. Also important is the human side of technology, and at least one multinational corporation in the Fortune 500 is offering a training program to help its managers cope with worker resistance to new technology.

The objective of General Electric Co.'s New Technology Workshops program is to teach managers how to convince skeptical employees to accept new technology as they would any other productivity aid, instead of viewing it as a job threat. But first, GE must convert its noncomputer-literate managers.

"Even managers can have misgivings about technology," Dan Pellei, program manager of GE's Computer Learning Center here, noted. Pellei, along with Ray Stark, manager of employee relations/manpower for the Corporate Employees Relations Operation, developed the New Technology Workshops about three years ago after employee relations personnel indicated a need for the training program.

The workshops were offered only to employee relations personnel until "we got feedback that the program would be great for other managers," Pellei said.

Given for three days each quarter at the learning center to management personnel companywide, the program gives managers a basic understanding of technology to allay their own fears, and it gives them planning and diagnostic models for understanding the resistance of the work force to the technology — "methods for implementing change," Pellei said.

The program can cover so much ground because each hour is devoted to a different topic. "It's an exciting, dynamic program, with the theme changing every hour," Pellei said. "Many people come before the group, and interspersed between the speakers are a series of films."

Those films, covering various aspects of computer technology, come from sources such as the Japanese government, the British Broadcasting Corp. and the television show, *MacNeil/Lehrer Reppt.*

Although workshop participants are given an overview of the technology, the emphasis is on the implications of technology and the behavior and attitudes of workers exposed to it. Participants study and discuss case studies of successful automation implementations, and role playing is used to examine the reactions of all the workers involved — blue-collar, managers, office workers and professionals.

"We teach them how to approach user resistance, how to anticipate and avoid problems," Pellei said. Managers are also taught the importance of including workers in planning, rather than simply foisting change upon them.

The entire course is taught by various GE personnel, with the exception of one outside consultant. Pellei estimated that about 100 people have gone through the course, which costs about $50,000 to put on.

Since many computer-related courses are taught at numerous GE sites, the learning center offers only courses not available elsewhere within the company — and possibly not available outside the company as well.

GE Course Urges Immersion In Technology

BRIDGEPORT, Conn. — Without early, total involvement from the work force, efforts to implement automation in the work place will fail.

That was the conclusion drawn by Jeanine Balis after attending General Electric Co.'s New Technology Workshops at GE's Computer Learning Center here. Balis, a specialist in relations manpower inventory for GE's Corporate Employee Relations Operation at the Fairfield, Conn., headquarters, was one of 20 noncomputer-literate managerial personnel who attended the three-day quarterly session in March.

Although she operates a CRT terminal and maintains a data base on all individuals who work in Employee Relations, Balis described herself as "just a beginner" technologically. She took the course to improve her ability to counsel other employees on how to handle change brought about by computer technology.

One of Balis' instructors was a fellow GE employee, engineer John Cain. For Cain, the object of the course is to "let people know the benefits of technology, that it can improve productivity, the quality of work and life," he said.

"A lot of people like to view technology like a tourist traveling through a foreign country from the comfort of a bus — lovely to look at. But technology is changing so fast that they have to get off the bus and drink the technological water," he added. "Technological dehydration is good for no one. You can't isolate yourself, you must get involved."

Toward that end, Balis spent her first day at the New Technology Workshops immersed in the technological pond. Starting with the basics, speakers and films moved students on through the technological age to the present. Areas covered included the history of chips — in the British Broadcasting Corp.'s film *Now the Chips Are Down* — as well as programming, software engineering, turnover, robots and other computer problems.

"People issues" comprised the next two days. One case study examined the successful implementation of robots where "there was greater resistance from the managers than the workers," Balis said. The robots were well received by the workers because they were assigned to jobs the workers did not want, she noted.

What to Do If Seminar Goes Sour?

Q A brochure from a DP management firm caught the eye of our president, and he asked me to make arrangements for an in-house seminar. I contacted the firm and requested a quote. A representative of the firm quoted $3,500, which I thought was a bit bigh for a half-day seminar. He asked what I thought was fair. We settled on $2,000, but I still thought the fee was a bit high for a canned presentation.

The person who presented the seminar knew nothing about our environment and was embarrassingly ill-prepared to present the seminar. He was unable to answer simple questions or elaborate on his own transparencies. What should have been a good seminar turned out to be a waste of time and reflected poorly on me.

The final blow came when the bill arrived with almost $1,000 of additional expenses tacked onto the quoted fee. Do we have any recourse?

A It is unethical to attempt to price gouge an unsuspecting client. The consulting firm that presented the seminar should have inquired about your environment and quoted you a fair price from the start.

Even though it is common practice to bill expenses over and above the fee, this should have been documented in writing or at least mentioned in your initial conversation.

Moreover, the consulting firm sent someone who was not qualified and, as a result, wasted the time of the people in attendance and caused embarrassment to you.

Unfortunately, your only economically feasible recourse is to appeal to the consulting firm's sense of responsibility. Make the firm's management aware of your dissatisfaction both verbally and in writing.

If the firm is reputable and these practices are uncharacteristic, it will apologize and reimburse the expense portion of the bill — and, perhaps, the entire amount. But if your interaction with this firm was representative of how it does business, do not expect a reply.

Q Which universities have Ph.D. or MBA programs in management information ayatems (MIS)? What is the salary differenre between Ph.D. and MBA graduates for those who have some work experience?

A The Society of Management Information Systems maintains a list of universities offering Ph.D. and MBA programs with an emphasis on information systems. Send a self-addressed stamped envelope to the organization at 111 E. Wacker Drive, Chicago, Ill. 60601.

Your salary and success potential are very much dependent upon where you receive your MBA. Some "universities" almost sell the MBA. You would be better off with a year's experience than a degree from one of these institutions.

An MBA from one of the 50 or so top universities (several offer an emphasis in MIS) will give you a lot of leverage during salary negotiations. With no experience and an MBA from a prestigious university, expect to start in the $30,000 range. Add the right combination of initiative, personality and three more years of MIS experience and you might start in the $50,000 range.

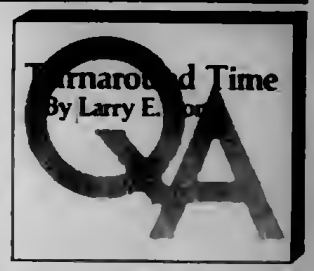
Depending on your level of experience, a Ph.D. in MIS would put you in the $40,000 to $70,000 range. If you take the vow of poverty and pursue an academic career, cut that in half.

Q I am employed as a business aystems analyst/remote-site manager in a position that is both geographically and organizationally removed from the mainstream of my company's DP department. As a consequence, I am a stranger to my company's progressive outlook on the training, development and retention of its DP personnel.

I am becoming increasingly concerned both about remaining current and about my career development. I approached management with these concerns several times during this past year.

Each time, I was encouraged to participate in development/training programs comparable to others offered to employees at the same grade. However, my attempts actually to participate in these activities were met with "It's not related to your job."

This has happened with such frequency and predictability for virtually all DP-related areas that I have begun to question whether my job is a dead end. However, my company provides an enjoyable working environment, and I am reluctant to leave.



A The dominant trend in information services is to distribute processing, software and data closer to the people who use them. For this trend to be successful, people like you must be given the opportunity to maintain atate-of-the-art management information systems (MIS) skills.

All of a sudden, marketing, accounting, production and other functional area managers are being charged with the responsibility for distributed facilities and the careers of MIS personnel. In each company, a few managers are reluctant to recognize their obligation to support education in MIS, as well as their functional areas.

For this reason, I encourage companies to centralize the education function and budget for all people in MIS-related positions, regardless of their organizational affiliations. Present your concerns to DP management at the central site; they may agree with me and propose that MIS education be coordinated and funded through the rentral facility.

Long, president of Long and Associates, is a consultant, lecturer and author in the field of information services. If you have a question you'd like him to address, send it to Larry Long, Editorial Department, Computerworld, P.O. Box 880, Framingham, Mass. 01701.

10 Practical, Relevant and Useful TechTran Briefings

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Report Decries Condition of Calif.'s Technology

By Robert Batt
CW West Coast Bureau

SACRAMENTO, Calif. — The use of computer technology within government departments of the state of California has been slammed in an official report just released.

The report, written by Robert Del Agostino, program analyst for the state's Legislative Budget Committee, claims that the planning of computer technology throughout the state is seriously fragmented with no comprehensive statewide information technology plan in place.

Titled "The Utilization and Management of Information Processing Technology in California State Government," the report calls for setting up a state authority to develop policy, guidelines and standards for the use of new technology.

"The advent of office automation and personal computers and a trend toward decentralized computing resources present the state with a significant challenge in terms of managing these new resources effectively. At the present time, this challenge is not being met," the report stated.

As one example, Del Agostino cited telecommunications technology planning within the state. This, he claimed, is undertaken separately for voice, video and data, despite the fact that the merger of computers and communications has led to an integration of these systems.

"The state's current policies remain oriented toward large, central computing facilities, which, in some cases, are unable to provide the capability inherent in many of the relatively small desktop computer systems. It can no longer be assumed that large computing centers represent the most cost-effective means to meet all of the state's information requirements," the report added.

There has been a tendency within the state's government agencies to emphasize controlling the use of information technology rather than developing policies and standards for facilitating its use, the report continued.

Preceded by Controversy

The report was commissioned following the suspension of the controversial Statewide Public Assistance Network (Span), a $15 million computer project designed to centralize the delivery of public assistance benefits in California [CW, August 2].

The project was suspended after the state legislature refused to allocate further funds until a final configuration of the project is determined. A decision is expected later this year.

The centralized system was expected to save millions of dollars annually through equipment and personnel reductions throughout California.

The report refers to Span as the "study of a failure," replete with examples of inadequate control measures, incomplete system design and confusion regarding the role of data centers. According to Del Agostino, the project provided ample reason to ask whether there is something fundamentally wrong in the way the state manages its computer technology.

"The importance of information technology to California state government must be viewed as transcending pure administrative uses of the technology. It has significant economic implications statewide," the report noted.

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● OSI Publications Ltd. is offering "A Look at CICS/VS 1.6" to those CICS programmers, analysts and managers who will be working with IBM's new release and want a technical analysis of the recent enhancements. The 24-page article explains the "phase" installation offered by IBM, reports on available support for both old and new releases and details of the product's new facilities. The article specifies the task-oriented books making up the new CICS library; the support for new features of MVS/XA and on-line resource definition, Vsam subtask and journal; and restart and sign-on enhancements affecting data center management. Also detailed are such customization factors as CICS generation enhancements, system initialization and temporary storage. The article can be obtained from Janet Blakely, OSI Publications, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

● A guide to help small companies decide what business records to keep on file and for how long is available from 3M Corp.'s File Management Systems Division. "The Records Retention Roster" covers most of the nearly 900 federal and state regulations for retaining files. Records are listed by business function, including accounting, manufacturing, personnel and procurement. The guide is available from File Management Systems Division/3M, Department FM83-10, P.O. Box 33600, St. Paul, Minn. 55133.

● A booklet titled "How to (Almost) Completely Eliminate Computer Breakdowns and Malfunctions" is now available from the Metron Co., a Dayton, Ohio-based distributor of power line and data line filters. It discusses the most common causes of computer failure and error and explains how to eliminate them. The booklet is available from Metron at Suite 216, 1250 W. Dorothy Lane, Kettering, Ohio 45409.

● Quality Circle Institute has printed in booklet form "Quality Circles: Answers to 100 Frequently Asked Questions" as a means of introducing Quality Circles to management personnel within any organization. The booklet describes Quality Circles' Japanese and U.S. history, objectives, organization, implementation and techniques. The necessary training and consulting is also described in the booklet, available from Quality Circle at 1425 Vista Way, Airport Industrial Park, P.O. Box Q, Red Bluff, Calif. 96080.

Insci Slates Human Resources Conference

CHICAGO — Information Science, Inc. (Insci) will hold its 14th annual Human Resources Management Conference Oct. 16-19 at the Regency Hyatt O'Hare here. The conference has been structured for users of Insci's payroll/personnel software and on-line services, as well as management from nonuser organizations.

Insci said the conference theme will fuse technical, management and product developments with the critical issues facing human resources management today.

Among the tentatively scheduled speakers are Dr. Kathryn Cramer, director of the Stress Institute, St. Louis University Hospital; Dr. John Pettit, an international trainer who will run a session on negotiating; and Joel LaPointe, director of personnel systems, policies and procedures for W.R. Grace & Co., who will speak on analyzing the effectiveness of the human resources function.

The registration fee for the conference is $500 for members of Insci's international users group. For nonmembers, the fee is $550. Further information can be obtained from Insci at 95 Chestnut Ridge Road, Montvale, N.J. 07645.

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Big Apple Readies Integrated Payroll System

By Bob Johnson
CW New York Bureau

NEW YORK — After 18 months of planning, workers here will be getting their paychecks via a $20 million on-line, integrated data base payroll system expected to begin operation this July.

The project, undertaken as a joint effort between the city's Financial Information Services Agency (Fisa) and the Comptroller's Office, employs over 200 city DP workers and outside consultants. According to Fisa's executive director, Alfonso J. Izzi, the new payroll management system will put all payroll processing and analysis applications on-line to all city agencies in hopes of boosting payroll workers' productivity and efficiency.

The payroll system is a result of work done by an in-house Fisa DP team and contracted consultants who wrote all the system's software, including about 200 different programs, Izzi noted. This is the first time a DP project of this size was ever designed and implemented by a city agency, he said.

"Because the city is so diverse, the magnitude of the volume of reports and information processing is so large and also because there are so many exceptions to be dealt with in the payroll system, we really couldn't see any commercial software package that could do what we wanted it to do in our desired time frame," Izzi said.

In terms of processing, the payroll system is as large as Fisa's Integrated Financial Management System (IFMS), the city's central financial control system [CW, Jan. 28, 1980]. The new system has taken over the IBM 3033 that IFMS had formerly used, Izzi noted.

Generate Reports

In addition to handling all payroll reporting and check issuance, the system will generate 150 to 200 reports on a monthly, quarterly and annual basis for use by nearly 2,000 city payroll workers. Izzi maintained that by having an integrated on-line data base system, productivity in the payroll work force will rise substantially.

The Fisa executive explained that the former payroll system, including overtime payments, sick pay and vacation pay, operated as a manual batch processing system. There was no integration of the different payroll applications, and it was common to have a three-week to six-month lag in payroll processing, depending on the city agency involved.

"One of our biggest problems was the timely payment of overtime. In overtime situations, the timekeeper involved would have to send information to be key entered here at Fisa. Our new structure of payroll reporting will move from a dollar reporting system to an hourly reporting system. Applications such as premium pay [overtime] and sick pay will be tracked automatically and will show balances," he said.

"In addition, payroll checks will become more informative, including more information on deductions, credit unions and so on. We will also have an electronic funds transferring capability," Izzi stated.

The new system will get most of its input through three channels: on-line terminal input from time sheets, computer-to-computer communications from the larger city agencies and optical character recognition (OCR) devices. The agencies utilizing OCR devices (those with more than 1,000 employees) will be required to fill out preprinted payroll sheets that will be read by Fisa's Scan-Optics Corp. Model 2540 OCR.

Izzi said that there are 12 major data bases that will be utilized by the payroll system and hooked up to a dedicated IBM 3033 CPU. The system's on-line terminals include IBM 3178 and ITT 3278 models.

System operations will begin in July at Fisa, the Department of Transportation and the Department of Corrections here, representing about 12,000 out of 200,000 city employees. The remainder of the city is expected to go on-line by mid to late 1984.

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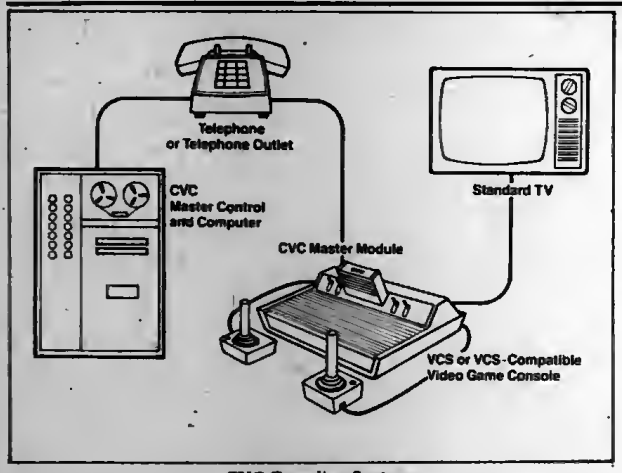

CVC Gameline System

Net to Transmit Videotex, Games to 12 Million Users

By Jim Bartimo
CW Staff

VIENNA, Va. — A national public data network that will transmit video games and videotex to 12 million users is scheduled to start this summer. Using the power of three dual processors, the newly formed Control Video Corp. (CVC) plans to transmit at 900 to 1,800 bit/sec over phone lines to the owners of Atari Corp. VCS 2600 and compatible game systems.

Future services to be offered include electronic mail and home banking, CVC said.

The network, called Gameline, will be accessible through a $60 modem marketed by CVC. The Master Module variable-speed modem plugs into the game system at one end and into a modular phone jack at the other.

The modem's 8K bytes of random-access memory will allow the games and text to be downloaded from Stratus Computers, Inc. dual processors at the network's center and stored for later use, according to Stuart A. Segal, CVC vice-president of marketing.

An additional battery-powered Cmos memory will store the player's logon name, the telephone number for the local multiplexer or Wats number and information on whether the telephone is push button or rotary dial.

The modem is variable speed to overcome telephone-line interference, a CVC spokesman explained.

Gameline was established by William F. von Meister, who also founded Source Telecomputing Corp. Source Telecomputing's public data base was later purchased by Reader's Digest Association, Inc.

"As we roll out other services . . . [we] expect to attract new nongame customers," von Meister said.

"We are turning those dedicated game units into multipurpose communications terminals and bringing the benefits of sophisticated computers within the reach of the average household," according to von Meister.

Each of the processors can handle 100,000 users, allowing the network to be expanded by adding more Stratus Computers machines.

The current 300,000-user capacity is expected to climb to four million in the next few years.

Each user will pay a $15 registration fee and approximately $1 per minute while on-line, a spokesman said.

These users eventually will be serviced by 100 to 150 multiplexers in major population areas, but other telephone-access methods, such as Wats, will also be used.

"Since this is a downloading system," Segal said, "you're on the phone for only a minute. In that minute, you can receive an hour of game play or six pages of text," according to Segal.

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Forth User Meet Set for Oct. 14-15

SAN CARLOS, Calif. — The Forth Interest Group (FIG), a 3,500-member organization for users of Forth programming language, has announced its fifth annual convention will be held Oct. 14-15 at the Hyatt Palo Alto in Palo Alto, Calif.

Forth is an extensible, interactive, transportable and compact language that can run on micro, mini or mainframe computers. The convention is open to all and will include hands-on tutorials, exhibits, vendor booths, lectures and discussions.

Registration costs $5. More information is available from FIG, which can be reached through P.O. Box 1105, San Carlos, Calif. 94070.

Handles Work Load, Improves Operations

Trucking Firm Moves With Large Processor

FENTON, Mo. — An easing of government regulations and a switch to specialized transportation services has moved a trucking company here to replace its two IBM processors with a larger IBM mainframe processor.

Claiming to be one of the first companies in the transportation industry to install a large processor to improve operations, last month United Van Lines replaced its IBM 4341 and 3031 processors with an 8M-byte IBM 3083-E processor. The 3083 will be used to handle the increased work load brought on by deregulation of the trucking industry, according to Jim Beachler, United's vice-president of information services.

United kept its old systems software lineup of the DOS/VSE Release 3 with CICS Release 1.5 running under the VM operating system. The only systems software addition was IBM's High Performance Option, Beachler said.

"The big advantage is that the new system will be able to handle the additional applications and terminals to be installed at United headquarters this year," Beachler noted, adding that the 4341 and 3031 combination had already been modified once to support additional applications. Beachler said United felt the older processors simply could not handle proposed plans to expand the United system to support about 220 terminals and more communications lines during 1983.

The expansion plans at United were brought on by changes in the government regulations detailing how much a trucking company may charge for its services. The regulatory modifications forced United to automate its manual Revenue Accounting Department, adding 50 terminals to the 4341/3031 system. Beachler recalled that the move overburdened the system.

"We had too many people waiting," Jack Walters, manager of computer and technical services, recalled. "Response time was slow; with the new eight-channel [3083], we expect the situation to improve considerably."

The 3083 is also expected to facilitate accounting procedures for annual revenues, which exceeded $357 million last year, Beachler said.

Currently, 20 of United's 600 domestic agents are linked to United's headquarters via Binary Synchronous Communications and Synchronous Data Link Control lines to an IBM 3705 Model 80 communications controller with 256K bytes of memory. More agents are expected to establish on-line links to the 3083, Walters said. Telecommunications subscribers can have up to 32 terminals at their facilities directly connected to the 3083 here, Beachler added.

"Last year at this time, only three of our agents were telecommunications subscribers. When revenue accounting went on-line, 16 subscribers were competing with that department for calculation of rates. When the fourth telecommunications line is installed in the western U.S. [sometime during 1983], about 100 terminals will be hooked in. The old system just couldn't have handled the additional load," Walters said.

Need for More DP Power

Diversification of United's operations also increased the demand for data processing power. United used to be a mover of household goods, Walters said. Now the firm has special crews to move electronic equipment, artwork, displays, plant machinery and newly manufactured products, such as furniture and appliances, clothing and hospital, hotel and restaurant furnishings. During 1982 and early 1983, dispatching systems for several special fleets were put on-line. In addition, an on-line rate quotation system is scheduled to go up in the near future.

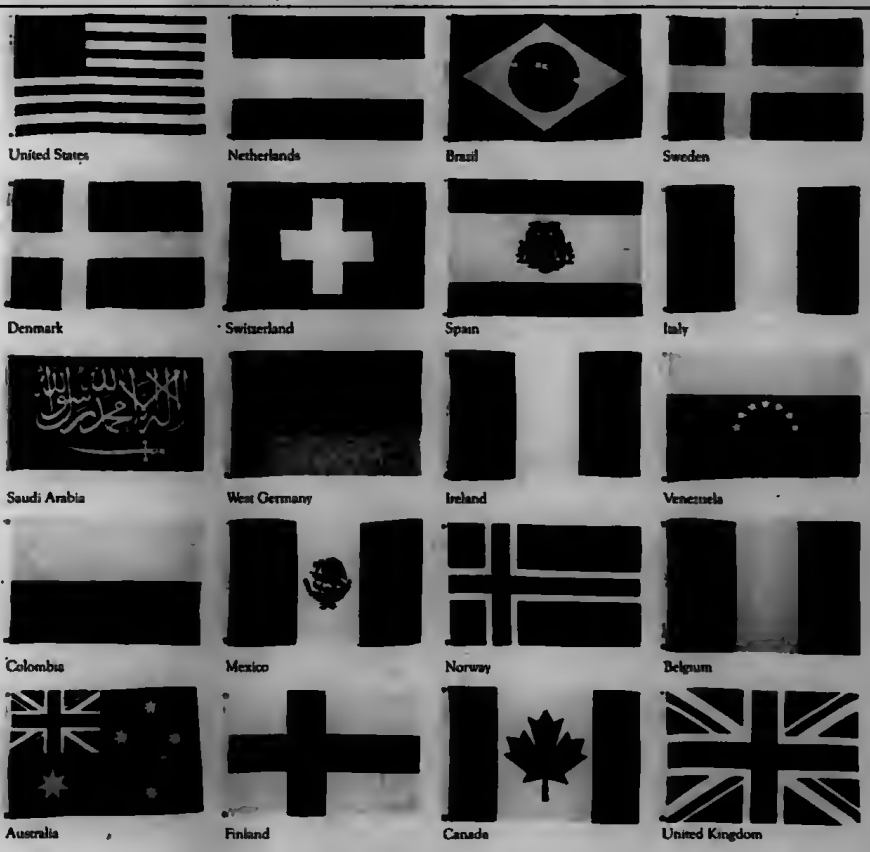
Walters added that United chose the 3083 because it can operate for about the same price as the combined 3031 and 4341, while offering roughly twice the computing power.

Usus Annouces Group To Focus on Modula-2

SAN DIEGO — Usus, the UCSD Pascal System User's Society, has formed a special interest group for current and prospective users of the new Modula-2 programming language.

Modula-2 was created by Niklaus Wirth, the inventor of Pascal, to answer difficulties encountered with Pascal. It is available for the Apple Computer, Inc. Apple II, IIe and III microcomputers, the IBM Personal Computer, the Sage Computers, Inc. Models 2 and 4, the Texas Instruments, Inc. 9900 and Zilog Corp. Z80 and Intel Corp. 8080-based processors.

Membership in the special interest group is free to Usus members. Annual membership in Usus costs $25 for individuals and $500 for institutions. Usus can be reached at P.O. Box 1148, La Jolla, Calif. 92038.



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Upgrade to Save County $10,000 Annually

CORTLAND, N.Y. — Upgrading to a new processor is not always a painful experience. County officials here recently installed a new system with four times more main memory and eight on-line workstations and wound up spending $10,000 less per year than they did with their old system.

Robert J. Carr, director of central services for the County of Cortland said the county recently upgraded from a Sperry Corp. 90/30 processor to a newer Sperry System 80 with 1.5M bytes of main memory. Not only does the new system cost the county $10,000 less per year to lease, but the addition of eight on-line workstations has been a big help to reduce the work load on his three-programmer data processing staff, Carr noted.

"We can run just about every department in the county concurrently," Carr said, noting that users of the new system are very willing to do a lot of their own data processing.

A floppy disk is dropped into the Sperry System 80 as an operator mounts magnetic tape.

But the real advantage of the new system, Carr said, is flexibility. "We never design a system that does just one specific thing; instead, we try to allow for expansion."

As an example of the system's flexibility, Carr said a library concept was designed to allow users to access a universal data base, retrieve information and create new reports without having to redesign forms or write new programs.

For instance, there are 38 state codes associated with real property tax. That means each of the county's 18,000 parcels of land may have property taxes computed on a different basis. If the state should change its tax codes, Carr noted, the county could simply update the central data base. That would be much easier than having to update 18,000 individual files.

In addition, the system has allowed the county to keep an updated file of the physical characteristics of property in the county. This, Carr explained, allows the county to assess property taxes accurately.

Carr noted the System 80 has also allowed the county to review data that is not part of any particular application. For example, the county now processes a "retirement report" as part of the county payroll package.

"[The retirement report] was not mentioned when we did the payroll [package] originally, but the information was there all the time, and we simply picked it up," Carr recalled.

"We are working in more areas and have more programs [about 400] than most counties our size," Carr noted, adding that the system took an immediate "two-year leap forward" in sophistication when the county added on-line workstations to the system.

The big advantage of the on-line terminals is users from five different departments can access their own information instead of submitting a request to the DP department. In addition, Carr noted, the on-line workstations have had the added benefit of making the users more prepared when they have to make a special request to the DP department.

Now, Carr explained, users make very specific, well thought-out requests instead of asking for general bits of information. Furthermore, the eight workstations currently in use take the burden of data entry off the DP department and put it on the users who understand the information. This should reduce errors entered into the system, he said.

Of the eight installed workstations, three are installed in the county's Department of Social Services, where they are used to process food stamps and to record various types of support payments.

In the county treasurer's office, one terminal is used to record transactions, process reports and generate

(Continued on Page 44)

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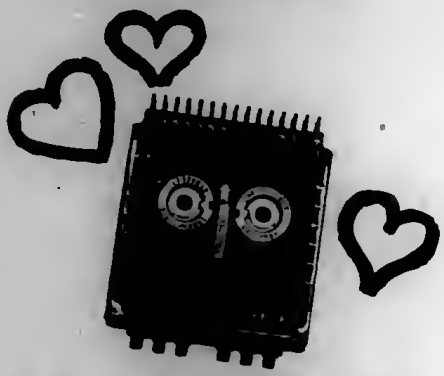

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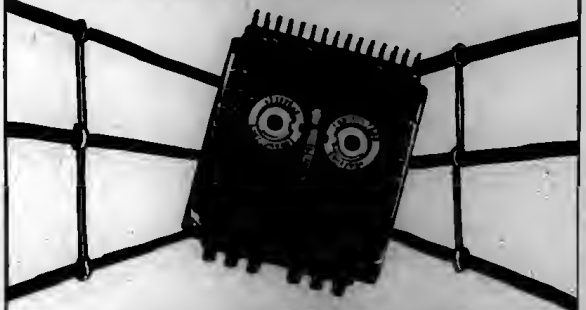

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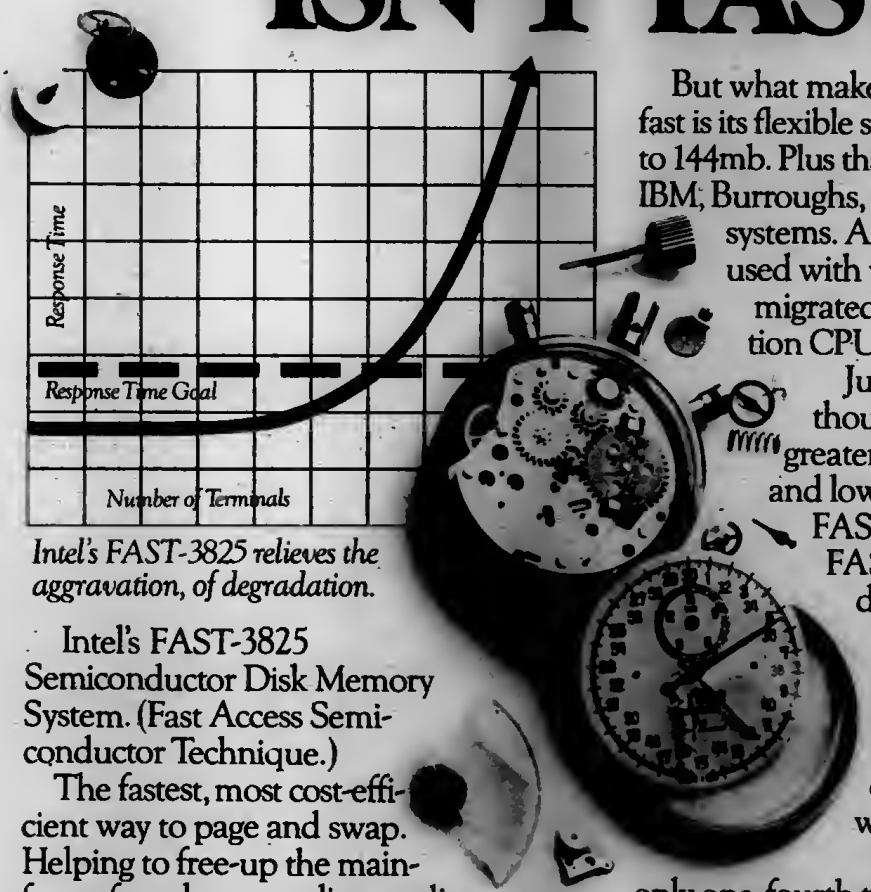

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DP Helps Firm Set Pace as Largest U.S. Wholesaler

By Robert Batt
CW West Coast Bureau

SAN FRANCISCO — Spending over $50 million annually on data processing resources, Foremost-McKesson, Inc. is setting quite a pace as it attempts to hold on to its position as the country's largest wholesale business.

The $4.5 billion conglomerate, with interests in pharmaceuticals, wines and spirits, chemicals and bottled drinking water, is placing heavy emphasis on distributed processing, telecommunications and office automation.

"Without big computer systems, you simply cannot be in this business for any length of time and survive," Jack Pfeiffer, vice-president of the company's Information Services Division, said.

According to Pfeiffer, computers, particularly in the pharmaceuticals area, will play a greater role in the future business direction of the company.

The company has two data centers in Oakland, Calif., one housing an IBM 3081 and the other a 3033. The 3081 is hooked up to 60 IBM System/34 machines located at various distribution outlets around the country. The company also has three System/38s, with several more to be installed later in the year.

The systems run under MVS, with CICS and DL/1 constituting the online data base system. Using IBM's Systems Network Architecture/Synchronous Data Link Control, a large telecommunications link has been established between the two data centers. Foremost-McKesson is planning to convert to IBM's extended architecture, MVS/XA, early next year.

According to Pfeiffer, last month alone the Information Services Division, consisting of about 275 people, including 115 application programmer analysts and 15 systems programmers, accounted for 1.85 million CICS transactions and 55,000 production jobs.

The company's fundamental philosophy, Pfeiffer said, is to develop systems that possess direct marketing and operational support. Computers are considered to be major competitive tools resulting in productivity improvements worth millions of dollars a year.

"We place the emphasis on accountability, and so we do not wish to dilute our energies by going through an exhaustive hardware and software evaluation. As such, the saving of money by becoming a mixed-vendor shop has not been a high priority," he added.

Bringing DP In-House

As the complexity of its DP resources increases, the Information Services Division has sought to maintain control by bringing more DP operations in-house.

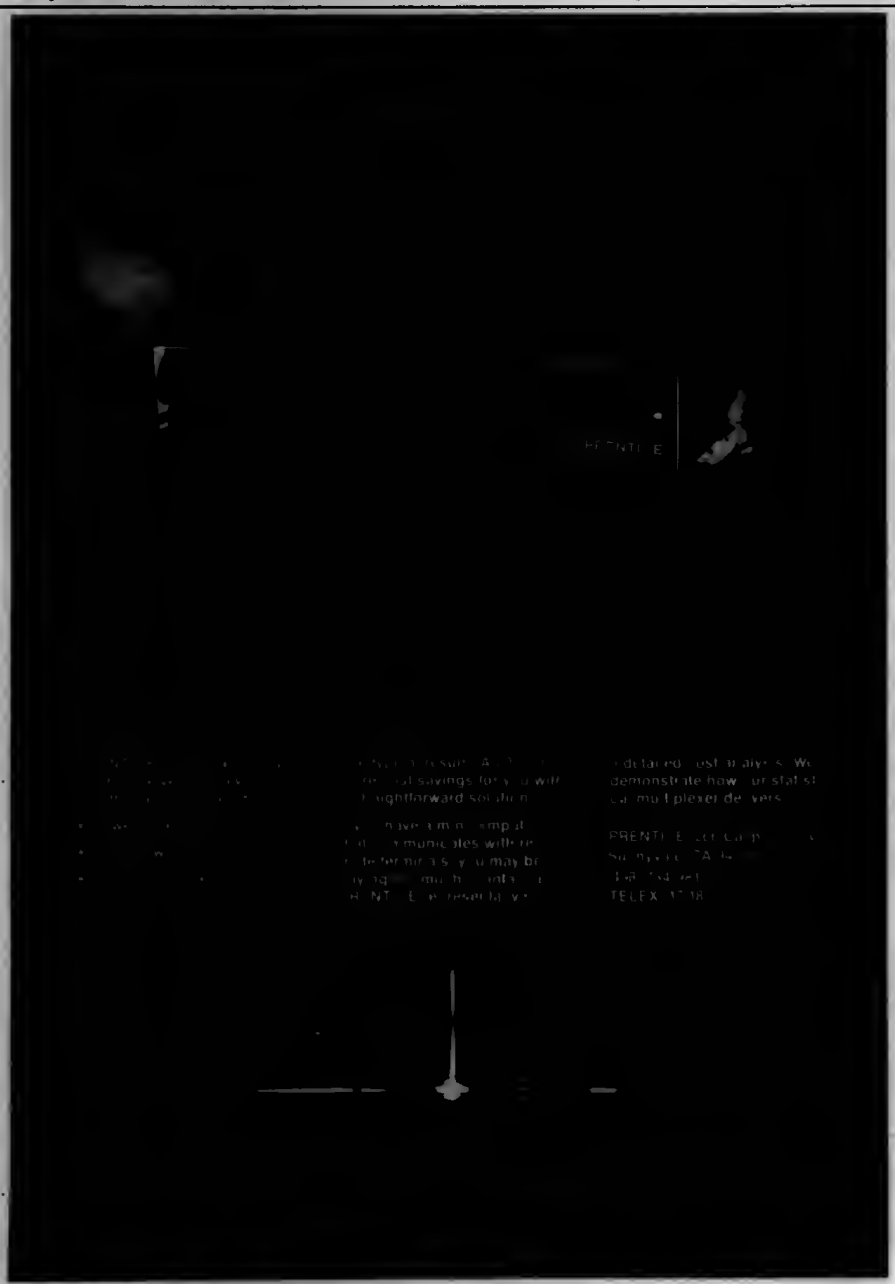
The number of data centers has been reduced from six to two over the last decade, with all technical support people coming under the auspices of the Information Services Division. For much of the company's history, the data centers had been fairly autonomous operations.

At the same time, Foremost-McKesson has responded to the trend toward distributed processing by giving various department groups their own programmers who work entirely for that group, though under the direction of the central DP function.

"With this arrangement, we think we can get the best of both possible worlds from centralized and distributed processing," Pfeiffer asserted.

As for the future, the DP executive sees computers becoming much more involved in research and development work throughout the company.

"Many of the opportunities we see ahead for distributing our products will require a greater level of computerization, particularly with microcomputers, and we have an office automation group working on this," he added.



Upgrade to Save County $10,000

(Continued from Page 42)

the county's 500-employee payroll. The terminal is also used to maintain an inventory on fixed assets, Carr said.

The clerk of the legislature's office has adapted the system to perform a variety of jobs. Accounts payable claims are entered through the workstation, and the system is used to print checks for disbursement the second and fourth Wednesday of each month.

Carr noted that the system is also used to keep track of long-distance telephone calls that go through the county switchboard. The processor prints a report of calls by telephone and department. This information is edited every two weeks and then posted once a month, according to Carr.

The county health department uses the system to record the activities of its 25 nurses and speech therapists. Reports are also generated on environmental health, toxic waste, waste storage and water supplies. Restaurant inspections are monitored as is the time health department employees spend traveling, Carr said.

DBMS Helps Citroen Track Sales, Market

LONDON — Life in the fast lane of the car industry requires close tabs on competitors to maintain market share, formulate realistic pricing policies and compare sales performance with that of other manufacturers. Daily intelligence is necessary to achieve these objectives, but the time needed to collate manually the large amounts of data has often meant that market researchers and sales teams lose valuable analysis time.

"That was obviously frustrating for us," according to John Hill, a market analyst at the UK headquarters of the French car manufacturer Citroen. "We ended up spending more time writing out our sales reports manually than actually assessing the information they contained — the job we were supposed to get paid for."

It soon became apparent, Hill said, "that a carefully evaluated computer system could do the job more efficiently and leave the company to make more effective business decisions."

Choosing a System

Citroen required not only a system that would automate the existing manual reports, but also one that could produce an even wider range of reports and allow the company to monitor its performance accurately. Citroen selected the Nomad2 data base management system from National CSS, Inc. as the tool to solve its problems; over the last few years, it has had several marketing support systems designed and developed using Nomad2, which runs on National CSS' time-sharing network.

The first was a promotion tracking and reporting system to allow Citroen to monitor daily sales of certain models by their dealers. A two-month dealer sales promotion was held in the 13 regional leagues, comprising 230 dealerships.

To get credit for a sale, the dealer had to submit a "bonus bond" coupon that earmarked the car and the bonus amount claimed. When bonus bond coupons were sent back, the data was interactively entered against the car. Several reports were possible, allowing Citroen to produce full league rankings. The system has since expanded to a complete dealer sales analysis and reporting facility.

Citroen's monthly registration and price analysis system allows the company to produce nine standard reports on the car market. "The standard industry registration summary would require two or three days' work to put into order to produce just the most basic report.

"Similarly, reports showing market breakdown by size, range and price were almost impossible to produce by hand, but this new system can now load the monthly data from the national data base tape, allow us to update eight look-up tables and car prices and run any of the nine reports in a fraction of the time," Hill said.

Keeping track of customers once they become Citroen owners is another important element in the market program. The Citroen Customer File System (CCF) was set up to help the company manage data on customers' names and addresses and other related information. "With a full label print of about 100,000 customer records — increasing by about 7,000 per quarter — the need for accurate updating is important," Hill said.

The other principal uses of CCF are to contact customers selected for market research projects and localized mailing by Citroen dealers. "One of the main features of the CCF system is the automatic tracking of the customer's previous Citroen purchases. This helps us identify potential buyers of the new Citroen models," he said.

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For Lower Costs, Better Services

Calif. Telecommunications Plan Seen Neeeded

By Robert Batt
CW West Coast Bureau

SACRAMENTO, Calif. — Government agencies in the state of California should develop a comprehensive telecommunications plan aimed at lower costs and better services for end users.

This is the main recommendation of a special paper on telecommunications commissioned by the state legislature here.

The paper, written by Jay Schenirer, program analyst in the Office of Legislative Analyst, forms part of a 167-page report on information technology within the state government.

Single Entity

Schenirer also recommended setting up a single state entity responsible for monitoring the development of state-owned local-area networks and promoting their compatibility.

"It is essential that the state develop a unified approach to telecommunications — one that retains flexibility with respect to planning the future," the special report stated.

According to Schenirer, however, the state is failing to take full advantage of the opportunities to minimize costs and improve service through new technology. Too much attention, he asserted, is paid merely to seeking ways to maintain current service levels at relatively stable rates.

"Our analysis indicates that this approach may cause the state to miss opportunities for increasing the efficiency of its telecommunications network and achieving cost savings," the paper added.

State agencies in California reportedly spend up to $900 million each year on telecommunications. "The problem is that no one has any central control over the technology and so the state has not been able to keep up with developments," Schenirer added.

The paper claimed there is no coordination of data, voice and video communications, and no state entity is investing adequate funds to study how the state might best use these new technologies.

"Little is being done to see how emergency services, hospitals and the state police, among others, might best integrate their services," Schenirer added.

The analyst recommended consolidating the state's planning and policy functions and employing people to do long-term strategic planning in the area of telecommunications.

Another obstacle to the integration of state telecommunications policy, he claimed, has been the proliferation of independently developed local-area networks within state agencies and educational institutions.

"This will become a serious problem as the state attempts to integrate its communications network. The lack of compatibility among local-area networks may result in costs that are higher than necessary."

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GENERAL ELECTRIC

Power Company Reverses System Design Plan

ATLANTA — Reversing the usual system design sequence with the help of a development methodology has paid off for a power company here. There has only been one maintenance problem on Oglethorpe Power Corp.'s Substation Load Monitoring System (SLMS) since it was implemented two years ago.

SLMS was developed to provide the firm's power supply and engineering division with forecasted peak power information on distributed substations, according to a spokesman.

The system was selected by the firm as a pilot project for the use of Ken Orr & Associates, Inc.'s Data Structured Systems Development (DSSD) methodology several years ago for several reasons. The project coordinator for the management information systems department, Faye Jones, explained that the system was to be developed from scratch, and therefore Oglethorpe information professionals could use the DSSD methodology from requirements definition through conversion. The project was medium-size, involving about 450 total man-days, and allowed Oglethorpe personnel to use and examine the entire methodology in a fairly short time.

The information provided by the SLMS was to be used to pinpoint substations with potential load-to-capacity problems (exception substations), to determine when to modify substations or to build new ones, Jones explained. Major events of the system include monthly exception reports from an existing system, which are updates of actual peak loads; semiannual (summer and winter) forecasting peaks for three years; and daily (as needed) user updates and report requests.

All project members completed a five-day course in structured systems design with an overview of requirements definition, she noted.

Initiating the Project

The SLMS project began with a user request for a report of characteristic data for substation metering points, historical and forecast load data using linear regression as the method of forecasting. The systems and programming team met with the user on several occasions during requirements definition, and entity diagrams were developed and refined. A Warnier-Orr chart was developed, defining the different types of substations within the system, noting those that would and would not be monitored by this system.

The next step and the most difficult task, according to Jones, was definition of the functional flow diagram. This process produced the system scope, primary system objective and system functions.

"Start-up was difficult because project members were using the DSSD methodology for the first time," she said. "The staff developed about eight diagrams before its final product, each diagram a little more explicit." However, she noted that use of the DSSD methodology "made it logically impossible to come up with a chart that was wrong. One team member may have had a little more detail than another, but a problem with the functional flowchart usually stood out. When project members stepped through it, the team always noticed the process-plus-data sections that did not flow logically," she said.

Jones admitted that "at first it was difficult to think from output back to input. But after repetition, it began to feel more logical." Project members began with a high-level overview of the functional flow diagram and divided it into more detailed data and processes. Then they defined the more difficult processes even further. They next developed I/O diagrams by taking each process and defining the inputs and outputs. Project members then described each report, drew bucket reports, assigned data names to each field, produced computerized single-page sample reports for each report and developed logical output structures for each report. They also began their data dictionary, using the data names in the bucket reports.

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System Now in Full Swing at Carnegie Hall

NEW YORK — Now in its 92nd season, Carnegie Hall has stood the test of time.

In October 1979, office automation made its debut at the prestigious performing center, which has showcased prominent musicians from Pablo Casals to Bessie Smith.

Before 1979, all aspects of Carnegie Hall's operations were based on manual systems, which were used to record donations, assign seats and handle all accounting procedures.

Bogged down by paperwork, Carnegie Hall was forced to increase its donor base and subscription ticket sales — its primary source of funds.

Herbert Weissenstein, director of development and strategic planning, took on the task of automating internal operations to increase efficiency and broaden the hall's donor base.

Working with a limited budget, Weissenstein devised a four-year growth plan, automating different areas of the hall's operations over several years, beginning with fundraising.

With virtually no experience in word processing or computer equipment on the part of Carnegie Hall, Weissenstein's first priority was to find a system that was easy to use. A second requirement was a system that could grow modularly to accommodate gradual installation of a system.

While investigating the computer marketplace, Weissenstein found an unwillingness among vendors to accommodate his plan for gradual growth.

"Almost every vendor wanted to sell an entire system at once," Weissenstein said, "and I knew it was in our best interest to take this one step at a time."

Weissenstein eliminated IBM, Basic Four Corp. and Control Data Corp., he said, because they stressed trading in an entire system for a new and different system as Carnegie Hall's needs grew.

"Wang Laboratories, Inc. was virtually the only vendor who listened to my plan and was able to design — together with our software consultants — a system to meet our growing data and word processing needs," Weissenstein said.

In October 1979, Carnegie Hall installed a multiuser Wang 2200 MVP CPU with 16K bytes of memory, a 5M-byte disk drive, one workstation and a 2281W word processing printer. Software from Cardinal Data Systems, Inc. of Englewood Cliffs, N.J., was installed a week later, and hours after that the system was up and operating, Weissenstein said.

First Application

The Wang system's first application involved a central customer file. Each of the then approximately 600 donors to Carnegie Hall was assigned a file with specific data, including a history of donations. This allowed Carnegie Hall to track donations and pledges accurately and respond quickly to contributors, Weissenstein said.

"To maintain a contributor, it is critical to respond quickly with acknowledgement letters," Weissenstein said. "Not only did the system allow us to maintain better records, but with word processing we could produce personalized letters to acknowledge gifts."

The second phase of the installation involved the maintenance of subscription lists and seat assignments. The third phase, completed in August 1982, is an in-house mailing list. With the list maintained by the Wang system, Weissenstein estimates Carnegie Hall is saving over $20,000 per year in service bureau costs.

The fourth and final phase of the installation involved computerizing financial records — accounting, accounts payable, accounts receivable and general ledger.

With the completion of phase four, the system now consists of 384K bytes of memory, two disk drives, three diskette drives, two word processing printers, three matrix printers and eight workstations.

"All our goals have been realized," Weissenstein commented. "The system is totally integrated into our environment."

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Graphics Helping Markets Plan Shelf Displays

SCHILLER PARK, Ill. — The once tedious task of planning product displays on supermarket shelves has become an exact science with the advent of computer graphics in the grocery store. Preparation time for fitting products onto each shelf has been pared down from one hour to 15 minutes by one distributor here.

The planning is performed by Sales Force Companies, Inc. (SFC), a bulk-goods distributor located here that serves 23 central states from Indiana to Colorado to New Mexico. The company is also a manufacturer's representative with four major functions: to introduce, promote, service and report on food products to the manufacturer of those products.

SFC consists of three separate sales systems serving the food service, consumer retail and industrial markets. All 23 divisions tie into the company's Digital Equipment Corp. Decsystem-2060 mainframe computer sytems via terminals.

"What we provide our food industry customers is a sales-justified shelf-space allocation program," according to Marsh Blackburn, chairman and chief executive of SFC. "As a result, inventory can be managed more easily, and sales losses due to out-of-stock items are reduced," he said.

Each of the sales offices has a terminal that enables the sales staff to feed the statistics necessary to create the drawing of the shelf into the computer. These statistics include a product description, graphics code, the number of inches per item in facing size, dollar sales per product, percentage of total sales, how many cases sell per week, number of items per case, retail price and number of shelves. The data is actually collected in the grocery store by retail personnel.

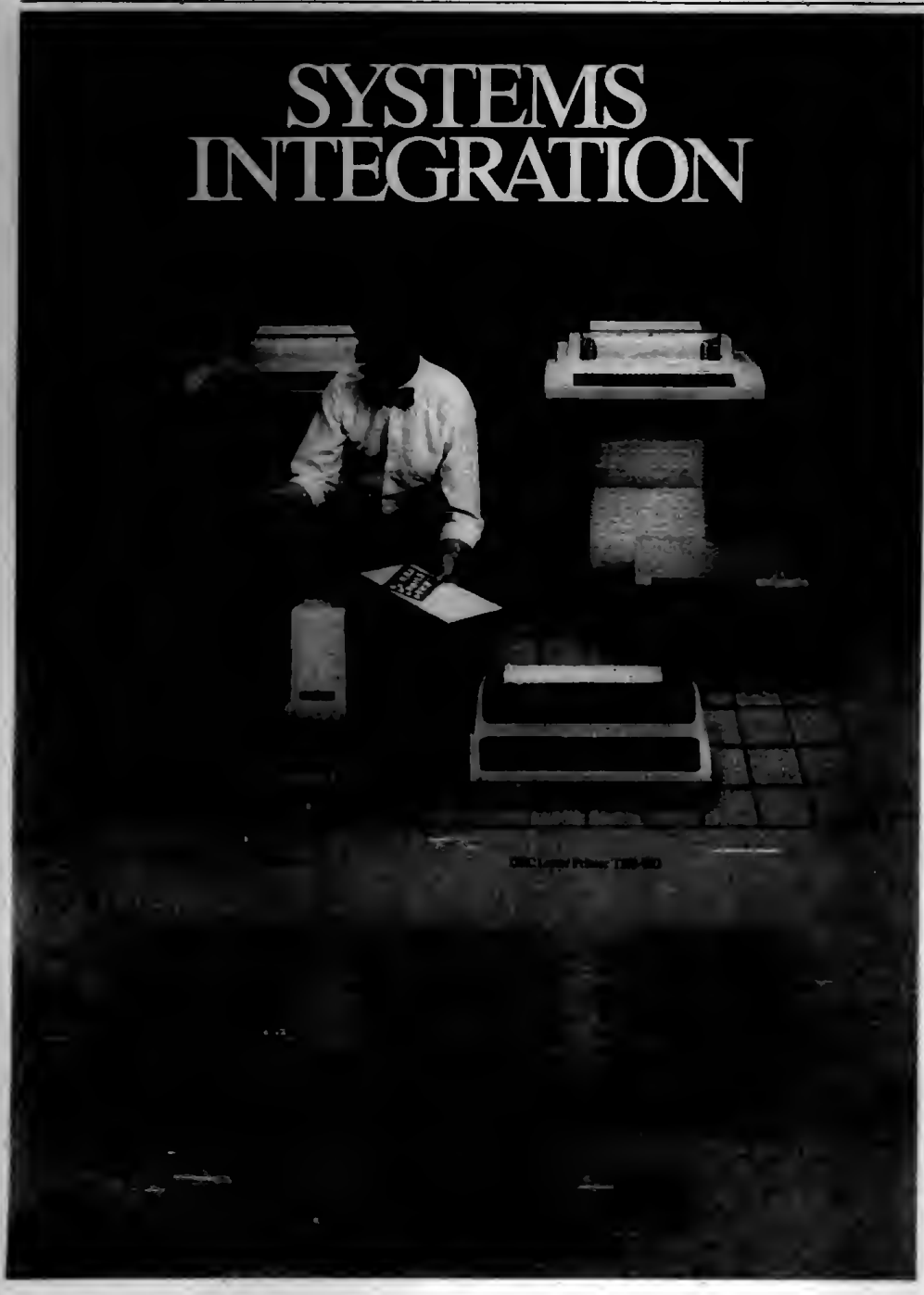
The computer then sequences items on the shelves, calculating placement by descending order of dollar sales per square foot. Finally, a Hewlett-Packard Co. plotter is directed to print a multicolored shelf "planogram," which is submitted to retail store management for approval. Once approved, the planogram is reproduced for field personnel, who actually arrange the items on the shelves.

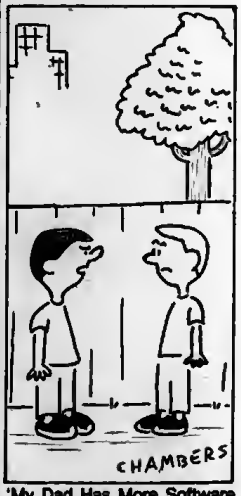
SFC uses Logistics Systems, Inc.'s Spaceman graphics package and an HP Model 7220C eight-pen plotter.

"In the past, we drew out our shelf positions by hand," Blackburn said. "This took at least an hour. If there were changes, it meant redrawing the entire shelf. It was time-consuming and — as with any manual task — there was a lot of room for error.

"With the plotter, it takes about 15 minutes to produce the first drawing," Blackburn continued. "After that, changes can be made in seconds. In fact, our sales staff can be much more creative and experiment with various displays. This means that the customer gets better service in the long run."

Graphics capabilities go beyond the shelf display drawings and are used to monitor financial and sales data. The plotter produces line and bar charts in colors, depicting the data in an easily read and understood manner. The sales data is useful for internal applications and to SFC's customers, Blackburn said.





'My Dad Has More Software For Our Home Computer Than Your Dad!'

Vice-President of Finance Updates Accounting System

HOUSTON — When Michael Hlinak joined Cimarron Companies as vice-president of finance, one of his priorities was to replace the firm's inadequate manual accounting system with a computer-based system; especially one that would give the company's management access to vital decision-making data.

Like many young and aggressive companies, Cimarron had started with a manual bookkeeping system but quickly outgrew its capabilities. In less than two years, the firm had already developed, built, sold and managed a great many apartment complexes and office buildings in Texas and Louisiana. However, the now $40 million company was seriously hampered, in Hlinak's opinion, by an increasingly burdensome manual accounting system.

In shopping for the appropriate hardware and software, Hlinak sought an interactive system that would allow check preparation to interface automatically with job cost information, financial statements and analytical reports. This system would, in short, have to accommodate the full range of Cimarron's activities. "We needed to standardize the mechanisms of property management, construction, development — all of our different companies — and integrate them into one software system," Hlinak said.

In addition, Hlinak wanted a system that could be easily learned by Cimarron's staff — none of whom had any experience in DP. A major consideration was to increase the productivity of the existing staff without adding to it.

Narrowed Choices

After talking to numerous software vendors, Hlinak narrowed his choices down to Management Accounting for Construction (Mac) and Property Management Accounting by Timberline (Prompt), two software packages that run on Texas Instruments, Inc.'s Business System 600 series. Timberline Systems, Inc. is a TI OEM that develops construction-related application software.

"[The software packages] were very powerful, yet easy to use," he commented, "and they introduced a standard menu logic for every application — payables, payroll, job cost, general ledger and so on. Moreover, all applications were fully integrated with word processing.

Hlinak's next step was to phone a number of TI users to check their satisfaction with these products. "Their responses clinched the decision. Time and time again, users described TI hardware as a very reliable workhorse."

Cimarron selected the Prompt and Mac systems with accounts payable, multiple ledger, job cost, property management, payroll, word processing, loan amortization, subcontractor, spreadsheet and depreciation, Hlinak explained. Cimarron also chose a configuration of TI's Business System 661 and eight Model 911 CRT terminals, along with TI's Omni 810 serial impact printer. The minicomputer came with 80M bytes of fixed disk storage, 16M bytes of removable disk storage and 512K bytes of random-access memory.

After the setup was installed, a brief period of classroom training was conducted. Cimarron started running its payroll from the system within 10 days, Hlinak claimed. The system was then integrated into other phases of business operations.

Now, for example, when a check is processing, the information is automatically entered under job cost and general ledger, charged to the proper account and entered into various files for reporting, according to Hlinak. "Tasks that previously took over an hour are accomplished in minutes."

Michael L. Hlinak and assistant Candace Capers review job cost reports prepared by Cimarron's Timberline/TI system.

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Beth Schmeck, Training Manager, Elgin Machine Works, Elgin, IL

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Stephen Anderson, Vice President, Data Directions, Oakland, CA

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Lowell Duzan, President, Carnegie International Corp., Indianapolis, IN

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Clients' Needs Met Faster With Relational DBMS

SEATTLE — The introduction of a relational data base management system (DBMS) has produced a major increase in programmer productivity and improved response to client needs for an employee benefits firm located here.

Howard Johnson & Co. (HJC), a provider of actuarial and professional consulting services to a large number of companies on the West Coast, specializes in the development and administration of all types of employee benefit programs, including profit-sharing programs, retirement plans, pension plans and employee stock-ownership plans.

Demand for expertise in the field has grown considerably as legal considerations, government regulations and questions concerning financial liability centered around employee benefit programs become increasingly complex.

In addition to representing over 700 clients, some with 20,000 employees, rapid growth over the last three years has resulted in tremendous data processing needs, requiring a high level of flexibility and adaptability.

Growth in Data Formats

This rapid growth resulted in a dramatic increase in the amount and variety of nonstandard data formats received from HJC's clients. This triggered a search at HJC for a flexible DBMS that could easily accept data in various formats that are readily accessible.

Since a major portion of revenues are derived from maintaining records for clients and having professional consultants work closely with those clients analyzing and interpreting the data, the bottom line for HJC management was fast — but inexpensive — information delivery.

HJC initially selected a Hewlett-Packard Co. package — an HP 3000 series computer and Image/3000 software. However, the firm soon realized it needed a more user-friendly and flexible solution. Rather than continue to use Image and design applications programs using RPG or APL programming languages, several alternatives were evaluated.

Among them was HP's Image-based Rapid and Relate/3000 from Computer Resources, Inc. of Santa Clara, Calif. Relate was eventually chosen, as the HP system was "more cumbersome to use and used up a great deal more disk space than Relate," Dick Wyman, a principal of HJC, said.

"We're still dealing with the same size DP staff as we had prior [to installation of Relate], and productivity is way up," Wyman said. As a result of the simplicity of the relational DBMS and its English query language, consultants are able to satisfy client requests without requiring the help of DP staffers.

Also, because nontechnical end users can develop their own applications, the DP staff can concentrate on more difficult tasks. Most ad hoc requests no longer go into the DP queue, which means "what used to take two to three days can now be accomplished in five minutes," according to Wyman. "The key thing is that it gives non-DP people access to their own files and the ability to do some of the work," Rick Eaton, DP manager, said.

In addition to widespread use of Relate outside the DP department, programmers accustomed to more traditional methods of programming have come to rely heavily on the relational capabilities of Relate. Eaton uses Relate to work with users in prototyping applications. He can now work with users to try out different approaches to get the information needed.

An on-line debugging feature saves time and effort, Eaton said. Noting that Relate has made a big impact on HJC's productivity, Eaton said that "when creating and modifying a file, we realize a 10-to-one savings over what it took before Relate."

In turn, Relate has enabled Eaton to reduce the DP backlog, while keeping the staff the same size it was.

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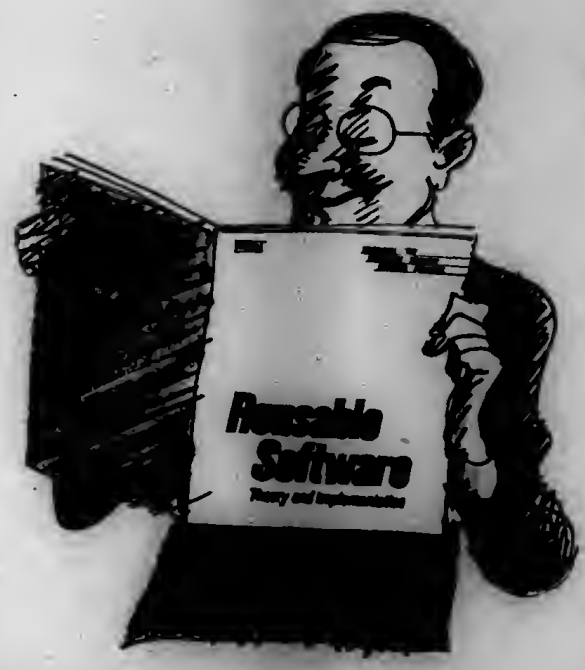

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In-House Financial System Helps Firm Set Prices Before Competition

CHICAGO — Weber-Stephen Products Co. has purchased a financial planning and modeling software package that it said has enabled the firm to set prices on its 200 product lines several months ahead of the extremely competitive housewares season.

Before the company purchased the financial package from a software house located here, it had signed an agreement with an unnamed New York City bank to develop a financial data base in addition to using the bank's time-sharing services. The services proved to be unsuccessful.

Explaining why the bank's services failed to satisfy his company's needs, Weber-Stephen's financial vice-president, Leonard Gryn, said that having to mail information to the bank, where it was then run through the computer and mailed back, caused a slow report turnaround time and was expensive.

When it was decided that the New York bank's services would not prove sufficient, Gryn said he then evaluated "six potential systems that ranged from major vendors' software products to dedicated computer systems."

"Basically, Weber-Stephens did not want to add hardware to the existing IBM System/34. That is when the idea of a dedicated system was eliminated and it became obvious that a new software system that we could run in-house was the solution," Gryn explained.

"Insight [from Interactive Program Products, Inc.] is like an autonomous system without the hardware, which enables me to manipulate data without affecting files in our main computer," Gryn noted. "I can make a copy of my files to keep information valid and then use its on-line capabilities for experimentation," he added.

Simultaneous Equations

Gryn said his first criterion that Insight met was its ability to perform simultaneous equations.

"The other software products we evaluated only had mundane, clerical functions, while I needed the flexibility of financial modeling," Gryn stated.

Another of the software's advantages is that it allows "what-if" scenarios to be played out, Gryn said. He said he can build expense accounts for items such as interest rates, raw materials, labor and marketing costs. The accounts can then be formulated into models as data for the "what-if" scenerios.

"[Insight] allows me to ask what would happen if interest rates go up, if advertising promotion expenses are altered or the selling price of an item or group of items changes," he said.

The resulting deta from the "what-if" gemes can then be formatted in a report form with users having control over the report's format, the calculations to be performed and how the totals are to be printed, he said.

"The preformatted atandard reports ere very convenient," Gryn remarked. "These recurring reports can be combined into report groups and processed simultaneously with e single command," he added.

The company plans to add an enhancement to the package that will ellow it to produce variance reports automatically that will allow company executives to compare "original budget figures to actual month-end totals," Gryn explained.

Nasis Meet Scheduled For Aug. 8-10 in San Diego

SAN DIEGO — The delivery of information resources in the 1980s will be the theme of the 15th ennual meeting of the National Association for State Information Systems (Nasis). The meeting is scheduled to be held here Aug. 8-10.

Presentations and panel discussions will cover the "Profile of the Information User," "The Potential of Graphics in the '80s," "The Use of the Information Center Concept" and "The Delivery of Information Resources Through Telecommunications."

For state government representatives, the registration fee for the conference is $125; for those from the private sector, registration costs $225.

More information is eveilable from the Nasis Executive Assistant, Box 11910, Lexington, Ky. 40578.

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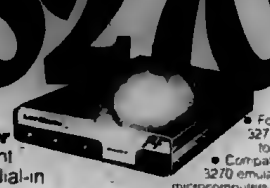

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Sales Rep Firm Automates Administrative Tasks

LOS ALTOS, Calif. — When Elrepco, a manufacturer's representative firm, was formed in 1978, manual tracking systems were established, but with an eye toward automation.

This was fortunate since two years later, Linda Bonnell, operations manager, was asked to build a computer system that would take over all administrative functions being handled manually, including everything from order entry to market analysis.

Bonnell drew on her 13 years of experience in the fields of data processing and customer service to establish and maintain a smooth, effective switch from a manual to computerized system for Elrepco.

"The key to changing over from a manual to computerized system is establishing a good manual system to begin with," Bonnell said. "If you have a good manual system, you will have little trouble changing it over to a computerized system. We designed a manual system that could easily be converted to a computerized system, so it took only two weeks to convert."

In the search for an adequate system, Bonnell said, she realized that "it's very difficult to design a computer program for the sales representative industry.

"The program must be flexible. Different manufacturers dictate their administrative policies to me, and I must implement those various policies. For a while, we thought we would have to design our own program."

Bonnell finally decided on a Honeywell, Inc. system from Western Business Computers (WBC), which went on-line Sept. 30, 1982 and has been "running without a problem ever since," Bonnell said.

The system incorporates a Honeywell DPS-6/32 minicomputer with WBC's Liberator I operating system. The computer carries 256K bytes of memory, with 32M bytes of disk drive storage.

The Elrepco system also includes two word processing terminals, two data entry terminals, a serial matrix printer and a letter-quality printer.

With the computerized system, Bonnell said, communication with manufacturers has been greatly enhanced.

"Also, it gives me better control over the activity of my accounts," Bonnell said. "We've eliminated the redundancy of the manual system and everything is, of course, much more accurate."

Another direct benefit of the computer system over the manual system, Bonnell noted, is in entering new orders. "With the manual system we had to enter an order in three places and log it in four places. With the computer system, we enter an order once and the computer does the rest."

Moreover, Bonnell noted, the installation of word processing packages has improved the overall professionalism of the company.

"We needed a system that would not limit our growth, and we needed a system where we would not have to worry about outgrowing the system itself," Bonnell said. "The hardware in the WBC system can be upgraded, and it won't have to be replaced in five years."

Software/Expo Set for Nov. 8-10

LONDON — Wembley Conference Centre, London, will be the site of the third annual Software/Expo this fall.

Billed as the UK's only event presented exclusively for software vendors to meet with professional software users, the show will take place Nov. 8-10.

Software/Expo includes an exhibition as well as a conference.

The latter includes sessions covering topics that range from computer-aided design to data base management to financial planning in microcomputers.

Further information about Software/Expo can be obtained from the Professional Exposition Management Co., located in Suite 205, 2400 E. Devon Ave., Des Plaines, Ill. 60018.

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Brown University to Install 50 Apple Lisas

PROVIDENCE, R.I. — Having been passed the latest technological football, those who reside in the groves of academe are running with it.

Within two weeks, Brown University, an Ivy League school of 6,600 students atop Providence'a College Hill, will install 50 Apple Computer, Inc. Lisa personal computers, a move that represents the beginning of more grandiose plans to provide each member of the faculty, staff and student body with a workstation by 1989.

The 50 Lisa computers, all donated to the university by Apple, will be used primarily by students and faculty in the humanities. In addition to the Lisa donation, the university expects to receive a gift from Apollo Computer, Inc. of 30 DN300 desktop computers to add to the school's existing arsenal of 17 Apollo DN400 computers. Brown will also purchase other brands of micros and desktop computers until it reaches its goal of 10,000.

The underlying philosophy of the program is a belief that computers should be made accessible to scholars and educators of all disciplines.

"What we're trying to do is of increasing importance," commented Norman Meyrowitz, a research scientist in the university's computer science department. "It is important for a liberal arts university like Brown to figure out how computers can be used in academics for instruction and scholarship."

The Lisas are going to those in the humanities because of that computer's style of interface, Meyrowitz said. "We can give them to people who are not technologists. They won't have to memorize idiosyncratic languages and arcane syntax. They can jump in and start thinking about their work, whether it be in music or Egyptology."

'Relative Cinch'

Building a communications network for the workstations will be a relative cinch, since much of the groundwork is already laid. The workstations will be connected through Brunet, the university's broadband network currently providing communications capabilities throughout 126 buildings on the campus.

Brunet will serve as the backbone of campuswide communications, with local-area networks, such as Xerox Corp.'s Ethernet or Apple'a Applenet, in dormitories and offices serving as gateways to Brunet.

The university'a mainframe installation consists of an IBM 3081 mainframe and five Digital Equipment Corp. VAX-11/780 superminicomputers. The mainframes will serve as the foundation of the workstation network but with a shift from their current emphasis.

"We're not going to throw our mainframes in the river," Meyrowitz said. "But rather than end-user machines, they will become data base server machines, storing library information, for example. The mainframes will still be doing the grunt work, the retrieval and storage of information."

Not only does the university expect to connect the local-area networks to the larger Brunet, but also to other institutions throughout Rhode Island.

"Our medical school operates in eight hospitals around the state, and we hope to be able to link these hospitals with the backbone network," Meyrowitz said.

Unlike other universities integrating computers into students' everyday life, Brown will not require that students buy a terminal. For those who cannot afford to purchase one, the university will offer large discounts or provide financial assistance.

Bulletin Board For Micro Users Set Up by NBS

WASHINGTON, D.C. — An electronic bulletin board that will inform microcomputer users about upcoming conferences, seminars and workshops, as well as update them on the latest telecomputing services, publications and users groups, has been established by the Commerce Department's National Bureau of Standards (NBS).

Dubbed the Microcomputer Electronic Information Exchange (MEIE), the service will be available 24 hours a day, seven days a week. Both federal and nonfederal users with Ascii terminals that communicate at 300 bit/sec with eight data bits, no parity and one stop bit can reach the exchange by calling (301) 948-5718.

Further information on MEIE can be obtained from the NBS.

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Claims $300,000 Saving

Insurance Broker Chooses Micro Net Over Mini

EAST ORANGE, N.J. — An insurance broker here claims to have saved more than $300,000 in hardware costs by installing a network of microcomputers instead of a minicomputer.

The Vogel Agency, which uses the system to manage corporate-funded group health insurance programs, was seriously thinking of replacing its time-sharing service with a minicomputer. But the firm wanted a system that was flexible and expandable and also easy to use, recalled the firm's president, Bill Vogel.

"It was a little over a year ago that I began looking seriously at in-house systems that could handle the business and grow as the business grew. Frankly, when I started, I had no idea of what the outcome would be — all I knew was what I wanted," Vogel recalled.

Vogel was looking at minicomputers from Prime Computer, Inc. and Perkin-Elmer Corp. when he contracted with the consulting firm Toucher & Spreen Associates to design and program a system that could handle health insurance claims administration and group administration.

Instead of buying the minicomputer, the consulting firm recommended the Vogel Agency install a network of Intertec Data Systems Corp. Compustar microcomputers connected to a central storage facility consisting of two Control Data Corp. 96M-byte disk drives.

Now managed by Eastern Benefits Systems, Inc. (EBS), a newly formed subsidiary of the Vogel agency, the network currently consists of 12 micros. EBS consultant Paul Spreen said the system can potentially be expanded to support 225 micros and multiple disk drives. But for the near future, Spreen said, the EBS system will probably use between 20 and 30 Compustar micros and three CDC disk drives.

Aside from the cost savings, one of the big advantages of the Compustar network is that the Vogel Agency can still access data if one or more of the microcomputers is out of service, Spreen said.

"No customer wants to hear that your CPU is down and that no work can be processed. And I don't want employees forced to be unproductive by an inoperable machine. With a network of micros, that worry is eliminated," Vogel explained.

Another advantage of the system is very low maintenance costs. Vogel noted that the only service contract necessary is on the CDC disk drives. "If one micro breaks down, it simply gets replaced until it can be fixed. The system keeps running no matter," Vogel noted.

Since all of the EBS data is stored in the central disk file, items like employee histories, claims histories, prevailing health care costs and diagnostic codes can be accessed from any micro. In addition, some information, such as prevailing costs and diagnostic codes, is available on magnetic tape from industry associations. To get that information into the system, Vogel said, his agency has contracted with a local service company, Tristar Data Systems, Inc. in Cherry Hill, N.J., to make a media conversion of the data.

Software for the EBS system was designed by Toucher & Spreen and is based around that firm's Fastware applications development aid.

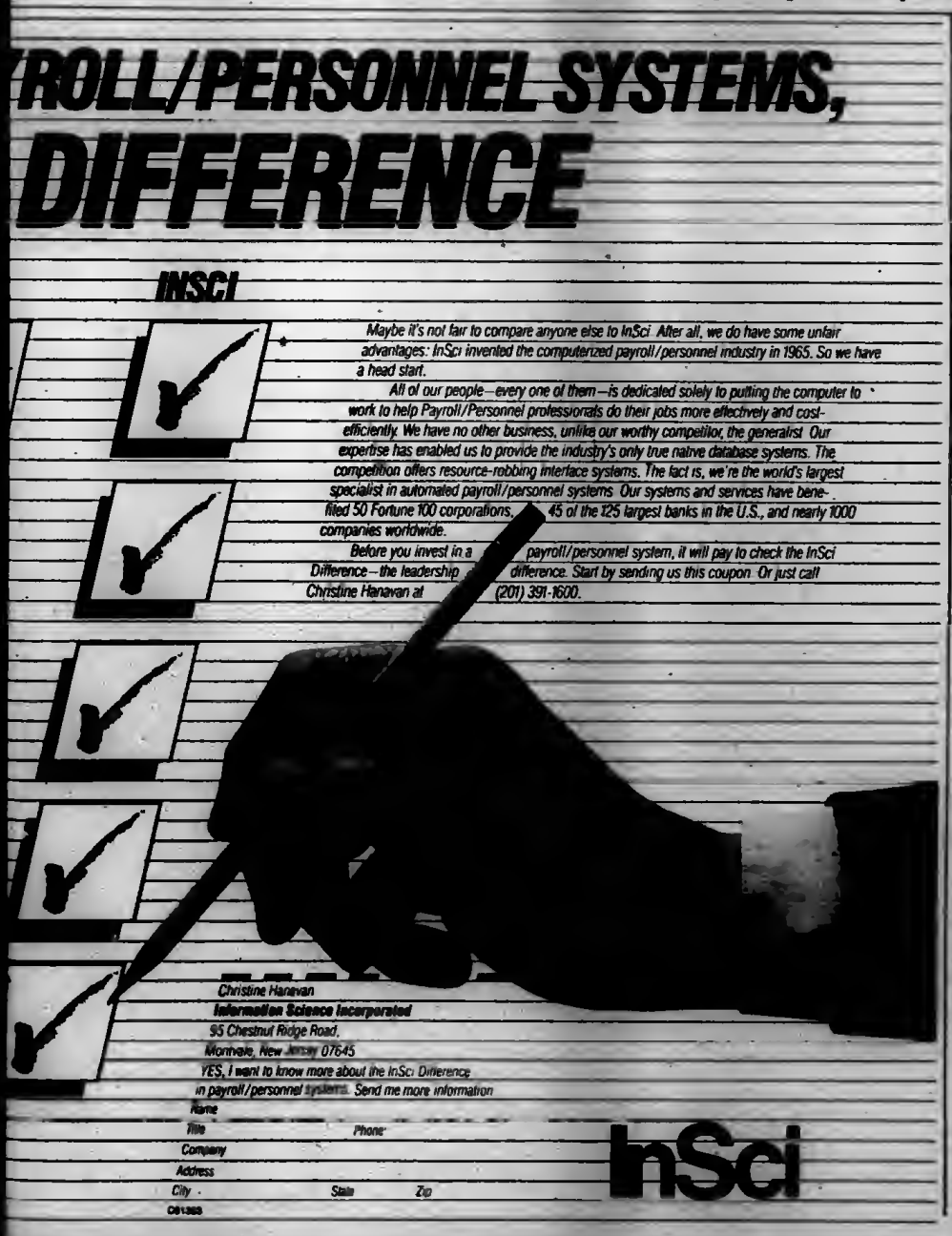
"Fastware supports high-level application-oriented verbs that are executed above a foundation of hardware-oriented routines. Because it is written and compiled in Microsoft, Inc. Basic, the foundation can be transported to any computer that supports Microsoft Basic with very few alterations. This leaves the application software-independent," Spreen said.

"The hottest topic in health insurance is cost containment," Vogel explained. "Because the costs of health care are so high, companies that self-fund are looking for every way they can to save money. With an automated system like ours, we can not only cut the cost of administration, but we can also have every claim evaluated by a professional to determine that the health services being delivered are sound and the charges are reasonable," Vogel continued.

The EBS system currently manages self-funded insurance programs from several major corporations, but Vogel maintains that his system can do more.

"With this system, we could easily put one or more workstations at a customer site so they can have direct access to data and files that pertain to them," Vogel said, adding that he expects the system to grow dramatically over the next five years.

"A year-and-a-half ago, we were told that the tasks involved in third-party administration were so complex, it would take a minicomputer with terminals, using very sophisticated software, to handle it. We were quoted equipment costs between $330,000 and $380,000," Vogel said, adding that the firm has developed what he feels is a better system for about $80,000.



Blue Cross Staff Creates Own CBT Courses

COLUMBUS, Ohio — It is not unique that the information center at Blue Cross of Northeast Ohio (BCNO) offers its end users a productivity tool in the form of computer-based training (CBT). What is special, however, is that end users in the BCNO program actually author computerized training courses in order to combat productivity problems within their own departments.

Allowing end users to create their own training solutions plays an important role at the BCNO information center. "A good three-quarters of today's information centers are failing because they do not fully analyze productivity problems before applying solutions," Gary Livingston, supervisor of CBT development at BCNO, pointed out.

BCNO is finding that CBT is the answer to more and more training needs because it offers low cost, training consistency and timeliness not found in on-site or off-site training courses, Livingston claimed.

At BCNO, employees are continually asked to identify productivity problems within their work areas, he said. Then, together with information center personnel, a determination is made of whether training can solve the problem and if so, what type of training is best. If CBT is the answer, the user, armed with a knowledge of the Easy Authoring System for Education (Ease) capability of Phoenix systems software from Goal Systems International, Inc., is able to create a training program to solve the problems that have been identified.

"The information center continues to help the user by performing all the necessary technical work surrounding CBT course creation and acting as a mentor to offer advice, guidance and encouragement. But since it is the user who knows what training should be included in a course, it makes sense that the user should actually be the one to create the training," Livingston added.

Patricia Grimm, a former end user who is now responsible for the IBM-3081-based information center's CBT development, has authored several courses under Phoenix Ease, including "Introduction to the DP Department," which helps new DP employees learn and understand the BCNO DP organizational structure, policies, procedures and physical departmental layout. She is currently developing a medical terminology course that will train 250 to 300 BCNO employees a year, most of them clerks, on medical terms needed to process health insurance claims.

Future Phoenix-based authoring will include courses in business communications, math, grammar, international disease codes, major medical policies (according to government regulations) and data base concepts. It is unlikely that Grimm will author all those courses herself. Instead, she teaches a five-day course on CBT concepts and the Ease authoring system so that other end users can write CBT courses to improve productivity within their own work areas.

Under CBT, each student receives identical instruction, which means knowledge and skill levels remain consistently high among employees, Livingston said. Courses are available whenever the need for training arises, he added.

Micros in Training

The information center is currently addressing the issue of microcomputers in training. "Up until now," Livingston said, "mixing mainframe and micro training has been tricky because there has never been a way to coordinate 100% consistent training on both mainframes and micros." There have been no presentation systema that could bridge the gap between micros and mainframes, he added.

BCNO has used Deltak, Inc. multimedia training courses for many years. Recently, Deltak announced that it has adopted Phoenix as its standard CBT presentation and authoring system, Livingston said. "We are [now] looking forward to giving users a choice of taking CBT, the very same courses, on either mainframe or micro. In particular, we are looking forward to using Phoenix-based Deltak courses on IBM IMS operator training, CICS, TSO, SAS and ADRS II, as such courses have become critical to the success of our information center," he added.

"With the Phoenix system, we are positioning ourselves to take full advantage of vendor-produced courses, and we are developing the expertise to develop our own," Livingston said.

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Therapist Points to DPers' High Level of Stress

By Paul Gillin
CW Staff

ANAHEIM, Calif. — Sleeplessness, headaches, nervousness, depression, excessive appetite, feelings of helplessness . . .

DPers who suffer from these symptoms might do better to run a couple of miles rather than run a couple more programs, according to an expert on stress management. People in DP suffer from a particularly high level of stress brought on by rapidly evolving technology, high turnover and the pressurized nature of their jobs, according to Dr. Jackie Schwartz, a psychotherapist and consultant and the author of *Letting Go of Stress*.

Speaking at a recent conference here, Schwartz said the exposition was a good example of the kind of sensory overload that leads to stress exhaustion. "Walking through this show, you're hit with a dazzling amount of information," she said. "You are also flying and changing time zones. All are stressors in this fast-growing industry."

Schwartz predicted that many of the exhibitors who maintain a rigorous level of stressful activity through July "will get hit with a cold around August." That is only one manifestation of stress, which also takes its toll in far more severe ways.

For example, Schwartz asserted that half the people at the seminar would suffer a heart attack at some point. One out of seven probably has a sleep disorder. And one in eight takes Valium regularly.

The reasons are partially environmental, the psychologist noted. "Many stressors are a byproduct of progress," she said, citing strikes, overpopulation, traffic jams and airports as leading stressors. Additionally, "due to speedy transmission of worldwide news, we're now aware of things over which we have no control."

Schwartz estimated that today we are subjected to about 100 times as much of this kind of stress as our grandparents were.

Most people could handle high stress on the job if they managed stress better off the job, she said. People tend to let pressures pile up at home, "because we are afraid of doing something good for ourselves." This is more true of women than of men "because they are more conditioned for giving. Stress-related illnesses among women are rising as fast as their numbers in the work force."

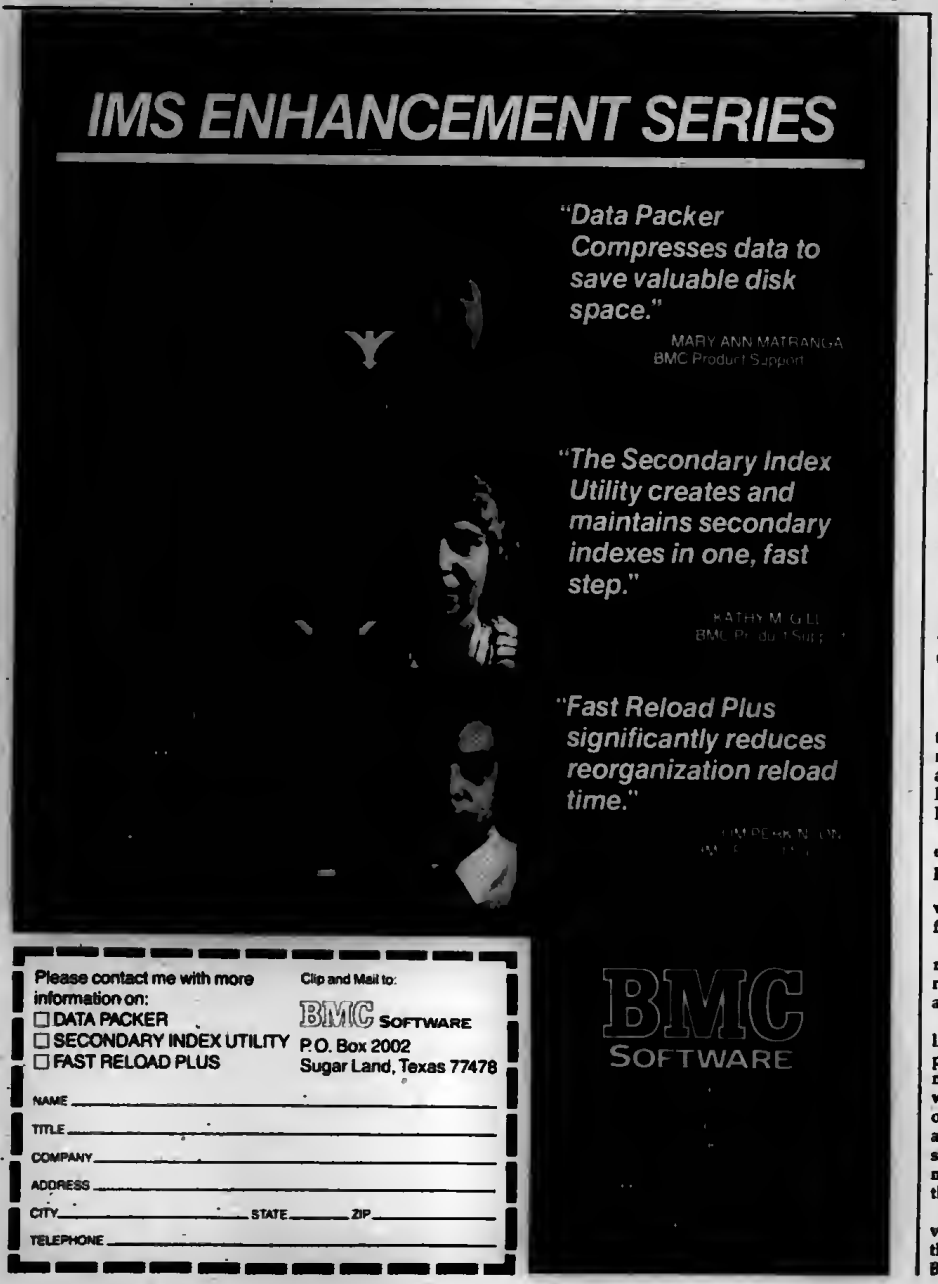
'Stress to Survive'

Everyone needs a certain amount of stress to survive, she noted, and most people can tolerate a very stressful situation for several months. To do that, we draw upon our reservoir of adaptive energy to get us through the most stressful times. "Man can live 100 years, but few of us do because we use up too much of our deep adaptive energy," Schwartz said. "You can be resistant against one major stressor, but when a lot of little things add up, people feel powerless and overwhelmed and just don't see a way out." Exhaustion and collapse often ensue.

It is possible to replenish that reserve of adaptive energy by making a few basic life changes, she said. Most people should adjust their diets to cut down on sugar, caffeine and nicotine. The morning coffee break, which includes all those stress-inducing items, would be a good place to start.

Yoga, meditation, walking in the woods and other activities that are peaceful and contemplative also help restore that adaptive energy, she said. But the quickest, most efficient way to handle stress is through vigorous, sustained exercise, the psychologist said. And the three best methods of doing that are lap swimming, riding s stationary bike and jogging.

It's really not that hard to make those changes if you want to, she asserted. "I'm always amazed that most people can change their lives after a brush with death."



Archival Storage Topic of Report

WASHINGTON, D.C. — The International Information Management Congress (IMC) is distributing a report titled "The Archival Storage Potential of Microfilm, Magnetic Media and Optical Data Disks."

A separate chapter is devoted to each of those three media and also to paper.

A concluding chapter lists the advantages and disadvantages of the four media.

As an aid to further research, the report also contains more than 400 references to the technical literature, a spokesman said.

In addition to the actual storage life of the media, the report compares the storage capacities of the media, their economics, the hardware and software necessary to record onto and read from them, the availability of standards governing size, quality and formats and the main areas of application for each of the media.

The report, No. IMC-131, costs $25 via surface mail and $30 via airmail through IMC, Publication Sales, P.O. Box 34404, Bethesda, Md. 20817.

Panel Offers Prototyping, Distribution as Solutions To Software Project Hassles

By Patricia Keefe
CW Staff

ANAHEIM, Calif. — Distributed development environments and prototyping are just some of the solutions being applied by large-scale software development managers coping with the problems posed by changes in computer hardware technologies.

Five software project managers, each with an average of 20 years' experience, gave their views on problems affecting development projects and offered some solutions at a recent conference session here titled "Software Management for the '80s."

Session panelists included moderator Steven Jacobs, TRW Defense Systems Group; Gerald Barksdale Jr., Ford Aerospace and Communications Corp.; Donald Reifer, Reifer Consultants, Inc.; Robert Loesh, Jet Propulsion Laboratory; Joshua Hurvitz, TRW Defense Systems Group; and Eric Harslem, Xerox Office Systems Division.

Software More Complex

Software is becoming more and more complex due to the impact of new technology, according to panel moderator Jacobs. Some of the areas impacted include office automation, programming environments, distributed data processing, architecture/communications, Ada, prototyping, large complex systems and management applications, he said.

The software content of systems is literally rising by the minute, while at the same time, software production is becoming labor-intensive, Barksdale said.

Some of the problems facing software development managers include a need for advanced programmers, too much effort tied up in paper and an annual rate of change on large systems equal to the annual rate of development within the original system, he said.

Barksdale offered a five-step program to aid software development projects, which he said encompasses six phases: system software requirements, analysis, project design, coding, testing and operation. The five steps suggested include:

- Ensuring that a preliminary program is complete before analysis begins.
- Ensuring that documentation is current and complete.
- Doing the job twice so that the first result can provide a simulation.
- Planning, controlling and monitoring program testing.
- Involving the customer — the involvement should be formal, in depth and continuing, Barksdale said.

Hurvitz suggested prototyping as one way of addressing an increased demand for software with a limited supply of software engineers.

Prototyping can serve as an engineering team resource for validating design ideas and concepts, Hurvitz said. As such, it functions as a "test for customer interaction with the system designer and design team."

What Prototyping Is Not

What prototyping is not, he warned, is an efficient and polished product, a deliverable system replacement, a threat to the normal development evolution of a system nor the answer to all technical questions.

A successful prototype effort demands a sound structured system design, proven implementation methods, a broad repertoire of existing prototype building blocks, automated software development and configuration management tools and an experienced and highly motivated team, Hurvitz said.

He next outlined the prototyping environment, which he said requires a small team, dedicated resources, an unconstrained work environment, rigid implementation standards and an evolutionary approach.

Another problem facing software development managers is a lack of upper management support. "What we don't know is how to educate upper management, which is too profit/loss-oriented and doesn't put enough emphasis on software," Donald J. Reifer said. Stressing the importance of investing in tools and people, he charged that upper management "doesn't see the handwriting on the wall."

ICCP Announces Top CCP Scorers

CHICAGO — The Institute for Certification of Computer Professions (ICCP) has announced the nation's top scorers on the 1982 Certificate in Computer Programming (CCP) examinations.

They are Christopher S. Roman, research analyst, Federal Computer Performance Evaluation and Simulation Center, Alexandria, Va. (business programming); Douglas B. Reingold, computer specialist, the National Institutes of Health, Bethesda, Md. (scientific programming); and Maj. Miles Wrigley, CDP, member within the deputate for automated data systems, Strategic Air Command Headquarters, Omaha, Neb. (systems programming).

Of the 480 candidates who took the December 1982 exam, 151, or 31%, passed. ICCP will grant a $300 scholarship in the name of each winner to the college of his choice.

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Dema Passes 43 Candidates In Data Entry Certification Exam

DALLAS — The Data Entry Management Association (Dema) last month here certified that 43 American and Canadian data entry professionals had passed the association's first national certification examination.

The examination is intended to provide a standard of professional qualification much like the one used to measure computer programmers and will be helpful not only to data entry professionals but to their employers as well, a Dema spokesman said.

The examination covered seven major areas including equipment selection, forms design, interviewing, motivation, programming and documentation, scheduling and control and training, the spokesman said.

In preparing for the test, candidates studied a 181-page manual for two weeks and attended a 1½-day seminar taught by Dema instructors.

The next certification exam will be held at the Registry Resort in Scottsdale, Ariz., June 8.

The Certification Program will also be given at the Data Entry Management Conference to be held at the Sheraton Harbor Island Hotel in San Diego on Oct. 17-19.

Training in Use of Micros Seen Essential for Top Execs

By Robert Batt
CW West Coast Bureau

ANAHEIM, Calif. — Managers of information services must develop a detailed training plan for the use of microcomputers among top executives if the technology is to be used successfully in large corporations.

That was the message from Karen Orton, vice-president of National Training Systems, Inc. (NTS), a Santa Monica, Calif., company that provides training products and services to large Fortune 1000-type organizations. In an interview here recently, Orton claimed the provision of special training for micro users has immediate benefits for the management information systems (MIS) department.

"If people are trained correctly, the MIS function can set accurate expectations, such as the ability to maintain data integrity and security and the ability of users to know what jobs are suited to micros and what should be left on the mainframe," she said.

MIS managers, according to Orton, should develop a micro training plan at two levels:

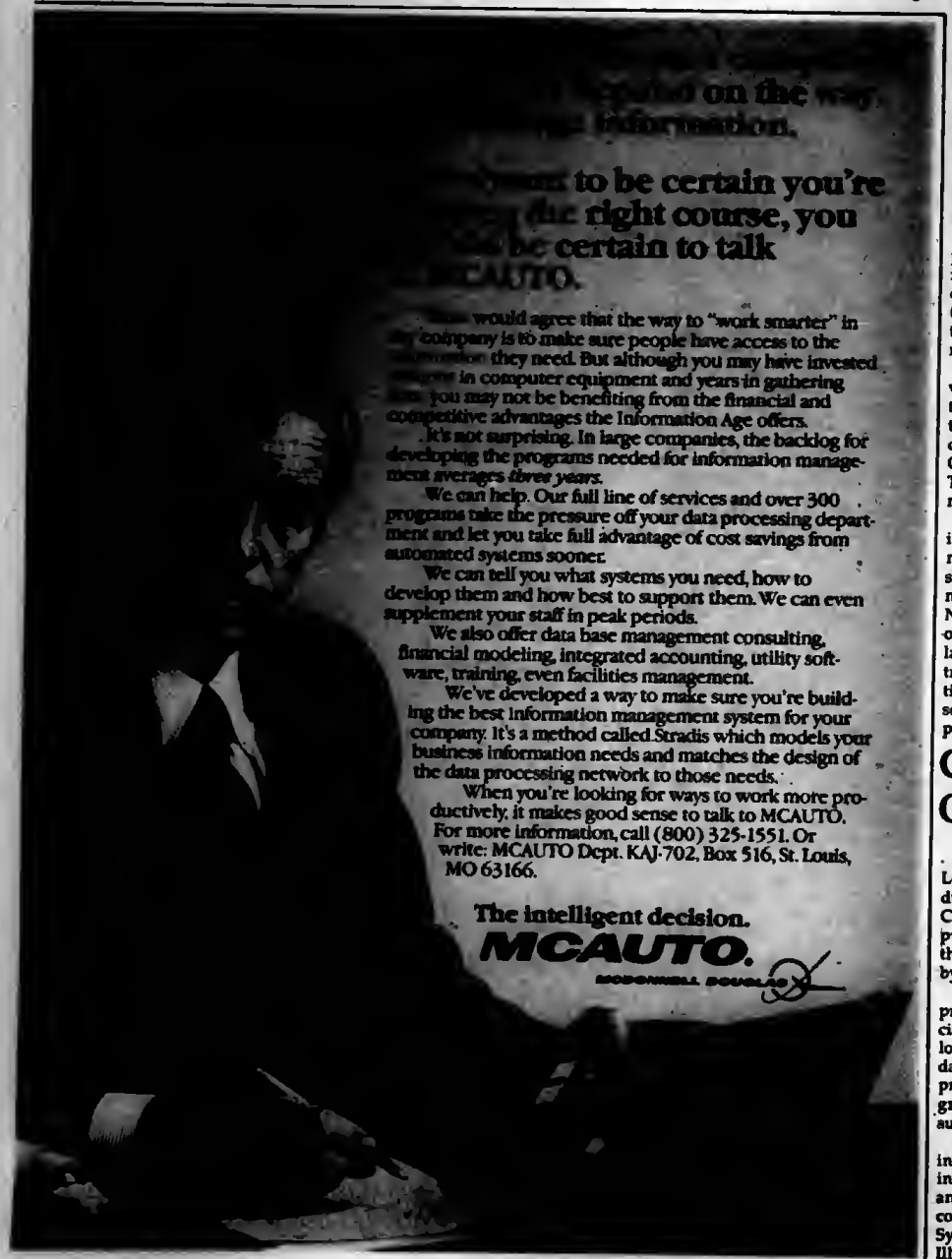
- At the organizational level to cater to new computing capabilities as they are added.
- At the individual level so that data processing professionals understand the use of micros within an organization and can determine what follow-up activities are needed as new groups within the company come to use them.

Not only does training allow for better and more immediate use of microcomputers with less ongoing support and maintenance from data processing personnel, but it also allows users to make better management decisions, she asserted.

Carefully constructed training provides an opportunity for users to iron out many of their initial technical problems through group consultations, thereby saving much MIS time and resources later on, Orton noted.

Formed in 1974, NTS has been involved in some 50 projects for IBM in the area of sales and computer user training. The company also recently developed an Executive Personal Computing Workshop, with United Technologies Corp. the first company to take part.

Since the use of microcomputers in large corporations is a relatively new phenomenon, many things are still unknown about user training needs, Orton admitted. As a result, NTS is currently conducting a study of 200 users and MIS directors in 20 large companies to discover what training is required beyond the initial orientation and what follow-up services are needed. The study is expected to be completed in August.



Course Offered On Apple IIe

GLEN ELLYN, Ill. — Fliptrack Learning Systems, Inc. has introduced a training course for the Apple Computer, Inc. Apple IIe microcomputer. The course is an extension of the demonstration diskette provided by Apple, the company said.

The tutorial talks the user through procedures needed to use each special key and essential command; load, run and save programs and data; copy programs or diskettes; protect programs; and modify programs. No technical knowledge is assumed, a spokesman said.

"How to Operate the Apple IIe" includes three voice cassettes featuring the Fliptrack "branching" format and an indexed operator's guide. It costs $49.95 from Fliptrack Learning Systems, P.O. Box 711, Glen Ellyn, Ill. 60137.

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Calendar

Week of June 19

June 20-21, New York — **Fourth Generation Data Management Software.** Contact: Software Institute of America, P.O. Box 97, Lynnfield, Mass. 01940.

June 20-24, New Brunswick, N.J. — **Summer Institute Courses: Computer Literacy, Computer Awareness and Computer Education.** Contact: The Institute for Professional Development, Suite D, 245 Nassau St., Princeton, N.J. 08540. Also being held June 29-July 15.

June 21-23, Washington, D.C. — **Federal ADP Procurement.** Contact: National Institute for Management Research, P.O. Box 3727, Santa Monica, Calif. 90403.

June 21-23, Philadelphia — **Seventh Annual Conference on Disaster Recovery Planning: Back to Basics.** Contact: Devlin Associates, Suite 795, 1150 First Ave., King of Prussia, Pa. 19406.

June 21-24, Atlanta — **Structured Requirements Definition.** Contact: Gayle Giesecke, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

June 21-24, Philadelphia — **Local-Area Networks.** Contact: Ruth Dordick, Integrated Computer Systems, 3304 Pico Blvd., P.O. Box 5339, Santa Monica, Calif. 90405.

June 22-23, New York — **International Communications: Products, Technology and Regulation.** Contact: Marcia Kaplan, Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

June 22-23, Hartford, Conn. — **CICS-DL/1 Interface for Application Programmers.** Contact: Keith Lamb, New England Data Services, Suite 4, Boston Post Road, Madison, Conn. 06443.

June 22-23, Ottawa, Ont. — **Decfaire-83.** Contact: Steve Michell, Laing and Laing, 145 Bradford St., Ottawa, Ont., Canada K2B 5Y9.

June 22-24, New York — **SAS Basics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

June 22-24, Denver — **Data Communications Systems.** Contact: Center for Advanced Professional Education, Inc., 11928 N. Earlham, Orange, Calif. 92669.

June 22-24, Washington, D.C. — **Data Communications II: System Design.** Contact: Marcia Kaplan, Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

June 22-24, Chicago — **Software Development: Toward Increased Quality and Productivity.** Contact: U.S. Professional Development Institute Software Development, Department KLMNO, 1805 Powder Mill Road, Silver Spring, Md. 20903.

June 22-24, Chicago — **How to Build and Use a Data and Information Resource Directory.** Contact: Barnett Data Systems, 19 Orchard Way N., Rockville, Md. 20854.

June 22-24, Monterey, Calif. — **Display Terminals: Growth Opportunities and Challenges 1983-1987.** Contact: Jewel Peyton, Dataquest, Inc., 19055 Pruneridge Ave., Cupertino, Calif. 95014.

June 23-24, New York — **IMS/Data Communications Applications Programming.** Contact: Rosa DiSanto, Comped Technical Corp., 1133 Ave. of the Americas, New York, N.Y. 10036.

June 23-24, Seattle — **Software: A Legal Briefing for DP Professionals.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

June 23-24, Williamsburg, Va. — **Software Requirements Analysis and Design.** Contact: The Education Foundation of the Data Processing Management Association, Department SRD, P.O. Box 3608 (3420 Kashiwa St.), Torrance, Calif. 90510.

June 23-26, Cologne, West Germany — **U.S. Computer Show.** Contact: American Embassy, Attn.: John Lumborg, Foreign Commercial Service, 5300 Bonn 2, West Germany. Also being held June 29-July 2 in Vienna.

Week of June 26

June 26-29, Atlantic City, N.J. — **The Association of Data Communication Users (Adcu) 1983 Annual National Conference.** Contact:

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Calendar

Adcu Conference, P.O. Box 20163, Bloomington, Minn. 55420.

June 26-30, Chicago — **National Computer Graphics Association (NCGA) '83.** Contact: Nancy Lefebvre, NCGA, 8401 Arlington Blvd., Fairfax, Va. 22031.

June 27-28, Orlando, Fla. — **Software: A Legal Briefing for ED Professionals.** Contact: The American Institute for Professional Education, Carnegie Building, 100 Kings Road, Madison, N.J. 07940.

June 27-28, New York — **CICS/VS Performance and Tuning.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

June 27-29, New York — **Videotex '83 International Conference and Exhibition.** Contact: Pam Fendel, London Online, Inc., 1133 Ave. of the Americas, 33rd Floor, New York, N.Y. 10036.

June 27-29, Summit, N.J. — **Data Processing for the Non-DP Executive.** Contact: Chubb Advanced Training Center, 480 Morris Ave., Summit, N.J. 07901.

June 27-29, New Brunswick, N.J. — **Computers in Education '83.** Contact: The Institute for Professional Development, Suite D, 245 Nassau St., Princeton, N.J. 08540.

June 27-29, Boston — **The Third International Conference on Decision Support Systems.** Contact: Pat Van Cleve, DSS-83, P.O. Box 10001, Austin, Texas 78766.

June 27-29, Boston — **User Documentation.** Contact: American Management Associations, 135 W. 50th St., New York, N.Y. 10020.

June 27-30, New York — **IMS/DB (DL/1) Application Programming.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

June 27-July 1, Chicago — **Structured Systems Design/Structured Program Design Combined Course.** Contact: Gayle Giesecke, Ken Orr and Associates, Inc., 1725 Gage Blvd., Topeka, Kan. 66604.

June 27-July 1, Washington, D.C. — **Digital Communication Systems.** Contact: George Washington University, School of Engineering and Applied Science, Washington, D.C. 20052.

June 27-July 1, San Diego — **Contemporary Computer Auditing — Integrity Controls.** Contact: Marge Umlor, EDP Auditors Foundation, 373 5. Schmale Road, Carol Stream, Ill. 60187.

June 27-July 1, Sunnyvale, Calif. — **Systems Resource Planning and Selection.** Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

June 27-July 1, Chicago — **CICS/VS Application Programming Command Level.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

June 27-July 1, New Orleans — **Predicting Computer Performance.** Contact: Institute for Software Engineering, 510 Oakmead Pkwy., Sunnyvale, Calif. 94086.

June 29-30, Cary, N.C. — **SAS Color Graphics Course.** Contact: SAS Institute, Inc., P.O. Box 8000, Cary, N.C. 27511.

June 29-30, New York — **Recovery/Restart.** Contact: Dianne Halper, On-Line Software International, Fort Lee Executive Park, Two Executive Drive, Fort Lee, N.J. 07024.

June 30-July 1, Denver — **Fundamentals of Data Communications.** Contact: Seminar Broker, 3213 W. 133 Ave., Broomfield, Colo. 80020.

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EDITORIAL

Put Your House in Order

If you think data security breaches only happen to the other guy, think again. A recent incident at Wells Fargo Bank in San Francisco [CW, June 6] illustrates the consequences that can befall organizations that neglect to take their data security seriously.

In late April or early May, a Wells Fargo employee occupying a sensitive management position ordered a subordinate to copy the source code for all the bank's proprietary applications programs. Written by several outside vendors, as well as by Wells Fargo's own programming staff, the code filled six magnetic tapes.

The tapes were transferred from the bank's program library to the manager's office. There, in violation of Wells Fargo's internal security guidelines, the tapes sat unconcealed and unsecured for several days. On May 4, bank security officers reported the tapes missing.

In the wake of the apparent source-code heist, bank officials have reportedly stationed additional guards at their building's main exits. Even so, data security within the financial institution still leaves much to be desired, according to a well-placed bank insider.

Wells Fargo's security shortcomings are by no means unique. A similar inattention to data and systems integrity afflicts businesses throughout the U.S., which are leaving themselves wide open to potentially disastrous data thefts, tamperings, unauthorized retrievals and destruction.

Some have already fallen victim to security-related horror stories that have found their way into the pages of this publication. Consider, for example, the large resort hotel whose key records, including its accounts receivable and guest lists, were almost irretrievably lost when its master and backup disk packs were damaged during a calamitous fire. Consider, too, the major credit bureau whose highly sensitive data base was penetrated by two former employees who sold the contents to "customers" with checkered financial histories.

Why do some companies treat data security cavalierly? One possible explanation is that they are so preoccupied with day-to-day worries that they overlook matters that do not demand immediate attention. Another is that the notion of sequestering data may seem slightly alien in a society that regards the unimpeded flow of information as a virtue.

But whatever the reason, two key points are scarcely open to question: Data ranks among the most critical of all corporate resources, and unauthorized data alteration or disposal can permanently bring a company to its organizational knees.

Not all American companies, of course, treat the protection of their crucial business information with seeming disregard. Many have devised and implemented laudable systems and data security schemes.

For those that have not, however, let us hope that Wells Fargo's recent misfortunes will serve as an object lesson to spur delinquent organizations to put their security houses in order.

'Sir, We Humbly Request That While Operating That Illegal System, You Keep in Touch With Us — Provided That the Need Should Ever Arise.'

LETTERS

'We're Still in Business'

The opening statement in the article "Magnuson M80 Tops Datapro '83 Ratings" [CW, May 16] is not only damaging to our company — it is incorrect. Magnuson Computer Systems is not gone, as the statement "proving the adage that no one appreciates you until you're gone" suggests.

We are still in business, servicing our customers and shipping products. In spite of Magnuson's financial problems and tha resulting adverse publicity that has been occasionally magnified by erroneous statements like the one in the article, we are still the best in the minds of our users.

It is ironic that this year's National Computer Conference keynote speaker was John P. Imlay Jr., president of Management Science America, Inc., a company that reorganized under a Chapter 11 proceeding in the early '70s.

Even the best of companies has had its problems. A Chapter 11 filing does not bankrupt a company — it gives it a chance to overcome its difficulties.

Assuming that reporting the facts is still more important in journalism than being clever, a more fitting opening to the article might have been: "Proving the adage that survivors inevitably are winners . . ."

Charles S. Strauch
President,
Chief Executive Officer
Magnuson Computer Systems
San Jose, Calif.

Spreadsheet Alternative

The microcomputer revolution has done a significant amount in bringing low cost and efficient computerization to tha everyday businessman. This has taken place primarily because of some very good software packages and the ease of use of the micros. We're seeing a lot of advertising and articles expressing the virtues of a micro-mainframe link. I believe this is like trying to mix oil and water.

The two systems perform their individual tasks very well, but when placed together they do not mix well. The mainframe's typical environment is large data bases with batch processing. Real-time efficiency is usually not critical in that area. The micro's environment is small data bases, real-time processing and, usually, less sophisticated applications than mainframes.

When linking a micro to a mainframe, you are probably requiring it to become inefficient and forcing it to work with small data bases.

The one most significant piece of software that has made micros so successful is tha apreadsheet analysis system. This is typically what is thought of when linking micros to mainframes.

As an alternative solution, users of mainframes should look for spreadsheet applications that function on mainframes and interface them with the appropriate applications on their mainframes. An extension of this would be to have terminals (micros) that could be used just as terminals to the mainframe and then flip a switch and it would act as a stand-alone micro with diskettes utilizing the abundance of micro software in the marketplace.

These solutions might not be as glamorous as the micro-mainframe link, but they appear to be more practical.

Kenneth R. Leebow
Certified Public Accountant
Atlanta, Ga.

LECHT ON SCIENCE /Charles P. Lecht

Robotics a la Bradbury: Imitations of Nature

In Ray Bradbury's *Martian Chronicles*, we are treated to the story of a person who, tired of too much modernity, recreates the environment described in Edgar Allan Poe's *House of Usher* so that he may — illegally, as it happens — revel in its spook house warmth, flail his arms at endearing bats and beasties and generally indulge in all the gaunt, gemutlich pastimes about which he has read in the now-banned novella. It is the year 2026, and our nostalgic hero, Stendahl, is living on the fringes of a colony of Earthlings on the planet Mars. Along with her colonizers, Earth has exported her laws against books and the recreation of the mother planet's historical and fictional pasts on the new world.

In Earth-on-Mars, robotry has developed to such a point that physical simulations assembled from electro/chemical/metallurgical building blocks have become quite indistinguishable from their natural models. We soon learn that Stendahl's menagerie — phantoms, spirited skeletons, delightfully slavering wolves, house mice, low-profile creepy-crawlers, even the fleas that dance on the back of the mangy artificial cat — are robots: nothing more or less.

It is not my intention to assess the antisocial behavior of our story's hero to the extent that it serves to illustrate man's indomitable spirit in the face of a society that sanctions book burning and other means of denying its continuity with an historic, if now politically unfashionable, past.

Rather, I thought it might be fun to examine the implications of the robotics with which the story is richly marbled and speculate on their meaning. All of them are fashioned after prototypes — from centipede to person — including those emanating from the perfervid imagination of Poe. While some are rendered explicitly as robots, we presume others, like Stendahl's phantoms, to be holographic recreations.

'Our resistance to creating robots in natural forms increases in direct proportion to their phylogenetic improvements, for we sense at the end of that particular line the ultimate fright: the perfectly roboticized us.'

What Value a Robot Mouse?

So what value a robot mouse? In *Martian Chronicles*, we learn that a robot mouse serves not only to reinforce the authenticity of the Usher II castle Stendahl has built; it has an amazing, practical function, which is to clean those hard-to-get-at corners — you know, the ones into which only a mouse could get.

It seems to me that Bradbury had shown uncommonly good sense in drawing upon nature in his quest for a robotic solution to the eons-old problem of policing corners and crevices, although I dare say that had Stendahl followed the prevailing architectural code for residential, multilevel, single-family mausoleums, he should probably have found little enough practical use for tidy mice, corners doubtless having been banned along with books and history and all else that might cast shadows and/or raise uncomfortable questions.

In any event, I cannot foresee a world devoid of corners, and when it comes right down to the sharpest, pointiest ones — well, God didn't make a mouse's puss for nothing, not to mention the whiskered antennae that guide it.

To create an ultrarealistic robotic "organism" — a mouse, a dog, a cat, whatever — and to try to replicate nature's model faithfully almost always seems to invoke responses of revulsion or humor, but little else. If the robot analogue is of an uncommon or not readily recognizable creature rather than of a cute house mouse — of a bacterium, for example — we might actually find ourselves preferring the synthetic to the real.

Replications of Nature

But this situation aside, we resist the idea that robots have any legitimate business looking like replications of nature, basing this on the conviction that nature can use some improving upon — and perhaps, too, on the desire to avoid the discomfort that would probably occur if we lived in a world where robots were indistinguishable from the real things.

Imbued with the potential to exceed human functionality in all observable areas and capable of being finished by artisans and artists to mirror the most (physically) beautiful of human attributes, future robots will surely present us with some consternating problems: Just think of a robot that looks and acts exactly like you. Whatever the case, our resistance to creating robots in natural forms increases in direct proportion to their phylogenetic improvements, for we sense at the end of that particular line the ultimate fright: the perfectly roboticized us.

A person in love with his car is one thing (more likely, in these days, to be viewed as suffering from a harmless eccentricity rather than from an obscene form of metallurgical miscegenation); the same person in love with a faultlessly human-appearing robot is quite another. Most of us are revolted by the material premise and excesses of *The Stepford Wives*.

As memory and processor technologies improve, so will our capacities for creating robotic devices whose abilities, in turn, ever more faithfully mimic ours — including the very capacity to create robots. Now that's a fine kettle of fish; one possible and purely logical consequence of this scenario could be the patently absurd situation of proliferating robots who disdain as irrelevant the need for human intervention. This is no idle speculation. The proof of its possibility was established long ago by Norbert Weiner, cyberneticist nonpareil.

Robotic Forms

But we've spent quite enough time on the problem side of this topic. I would like to explore the strange and unique issue suggested by robotics a la Bradbury. In Stendahl's reissue of nature as robot, he recreates her age-old forms, employing advanced technology no doubt, but taking care that a mouse still looks like a mouse. No forecast of robotic forms has ever suggested this is a likely course of evolutionary development.

(Continued on Page 68)

HUMAN CONNECTION /Jack Stonet

Outside Hiring Disrupts DP Center Stability

My stand on the issue of training from within vs. hiring from the outside is based on the desperate needs of computer centers for a stable personnel environment.

I believe that an acceptable policy should call for a ban on all outside hiring, except when the center opens up a brand-new area of technology that requires super-tech-level credentials or when slots at the trainee level cannot be filled from within the firm or when crash projects demand a rapid increase in skilled people.

When one reflects on the 10 easiest and fastest ways to devastate the morale of a group of employees, one is hard put to find one more effective than hiring an outsider into a senior position that the staff perceives could have been filled by one already on board who had obtained the proper training. Some of the emotions that run through the minds of dedicated, hard-working employees who have been passed over in the selection process follow.

"All the advance planning for our major systems takes place over a six-month to two-year time span. Why is it that we cannot apply the same strategy to the training and development of our staff and send staff members to training schools in anticipation of need? Admittedly we are shorthanded, but resourcefulness has never been a shortcoming of computer professionals; surely we are smart enough to work together to find suitable ways of springing loose one of our own for the training assignment, particularly when given enough notice.

"Bringing in someone over our heads has the same soothing effect as a slap in the face. Such an action tells us that all the management cooing about how wonderful we are is nothing more than flimflam to keep us working crazy hours."

Undiminished Frenzy

Yet center managers seem to condone the practice with undiminished frenzy. What is worse, they persist in doing so even though it's difficult to find ways to salve the hurt of those on board.

The most humane technique is probably a personal meeting with the rejectees, though even that approach may backfire. William Delaney, president of Analysis & Computer Systems, Bedford, Mass., provided these thoughts on how he handles such situations:

"Earlier in my career, I tried the face-to-face approach in which I specifically told individuals why they did not get promotions, in hopes it would help them improve and receive the next ones that came along. If the individual involved was level-headed, steady and appreciates that I was only trying to be fair in the criticism and evaluations, then fine. But this was rarely the case."

A 'Blast' in Response

"More often, I received a 'blast' in response," he said. "I was accused of everything from playing favorites to incompetence to racial prejudice to ignorance of people's importance and contributions. In self-defense, I stopped using the face-to-face approach.

"More serious problems may develop from the practice. One such problem is that the staff takes the assignment personally and develops an undercurrent of resentfulness. The unhappiness of the staff results in a reluctance to cooperate with either the new person or the old-line managers with whom they had fine relationships.

"Employees take the move as a direct criticism of their work and tend to get defensive and even argumentative on the job. Some of the better DPers may resign over the appointment.

"There is really no easy solution to the problem. Today, our firm both promotes from within and hires from the outside because it is in our business interests to do so. We base our selection on qualifications, as well as factors of seniority and individual ability. However, we must remember that regardless of how we fill our positions, someone will always feel left out and that, I guess, is the way life goes."

What Will Future Robots Look Like?

(Continued from Page 67)

Just what will future robots look like, and will any but fun-house simulacra look like us?

The jury is still out on the question of whether we and our immediate environments will change in the way we now seem to think they will in the future that technology is preparing for us. But it raises the issue of the validity of our presumed drive to confirm nature's forms (with all due respect to God's works, which we deeply admire).

With our collective gestalt embracing life's promulgation and prolongation, it seems contradictory that our inventions would do anything other than lend additional substance to that mind-set.

We are, thus, not too surprised to find the products of our labors reconfirming nature in weird and beautiful ways. Jet engines are found in some of Earth's most primitive aquatic creatures. Independent, multilegged motion, currently being touted as a new robotic idea for vehicles with which to meet the challenges of rough terrain on this and other planets, was adopted by life's most resilient creatures as an answer to the selfsame problem literally eons ago. The examples are endless. From nuclear energy to housing, food processing to farming, analogues exist in nature for almost every technological innovation the mind can conjure up.

Thus, it occurs to me that whatever means we may employ to turn our product, the robot, away from natural forms, one long-term possibility is that only those robots that successfully reconfirm our actual nature will endure. This gives rise to an interesting (and admittedly fanciful) scenario for the evolution of, for example, the robot on the automobile assembly line.

There is first an arm with spectacular capabilities to spit out paint, tighten nuts, screw screws — in short, the arm of today's robotic marvel. Soon this device will sprout a second arm; its brain (eyes and ears) shall already have been in place with the first arm in the form of a computer, a TV and an audio device. Next, a torso (why not?) to lean over the line more efficiently, this followed by legs, even toes and, possibly, a receding nylon hairline. Fuel for our robotic friend will be Big Mack (as in truck) solid gas burgers or, the world being how it is, Sushi MacMuffins. Entertainment could not be simpler; after work, the robot will be his own television.

Today's Archetype Workers

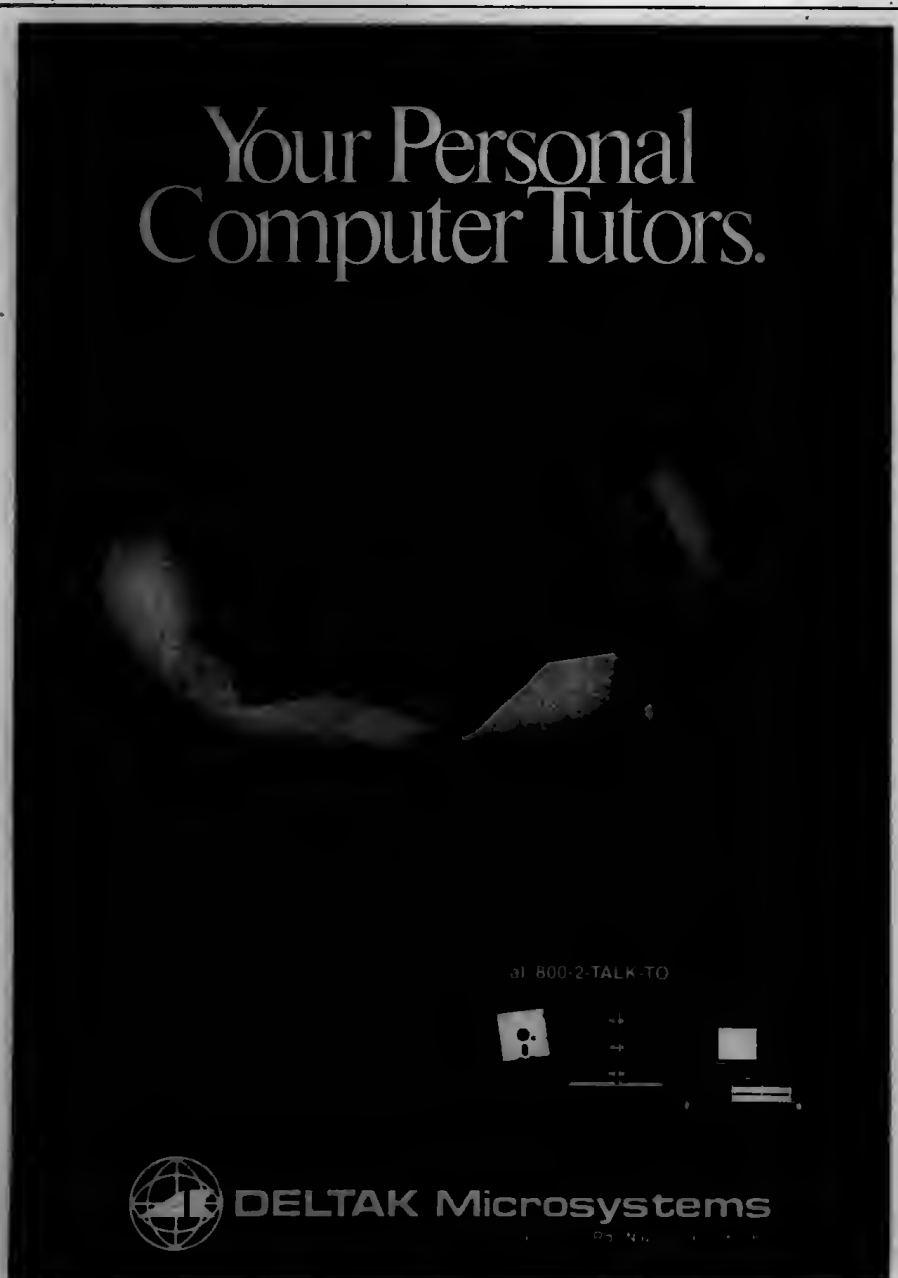
Is today's Joe or Yuki (American and Japanese archetype factory workers) truly at the end of this evolutionary sequence, say, in a thousand years? And what of the day when biochips emerge as artificially intelligent, living devices capable of controlling genetically engineered organisms of ever larger consequence and size? Why wouldn't we be tempted to produce ever more workers whose living and working skills would exceed our own, whose biological life would do likewise and who would never dream (could they dream?) of asking for a raise, all of whom would look like Joe?

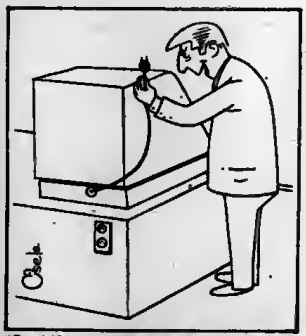
The whirring, hydra-like tubing, metal connectors and networks of sinew-like cables that typify today's vision of tomorrow's robot bear not the faintest resemblance to Joe. No more does the beeping mail-delivery cart resemble Alice.

But when our technology improves, to what forms will it give rise? If Joe reemerges in original form as ideally suited for manufacturing what have you and future assembly lines actually turn out to be manned by robots looking just like him, I would, of course, be surprised. Besides, by the time all this occurred, manufacturing and assembly lines as we now know them would almost certainly no longer exist.

All right, all right; nonsense, you say. Bradbury's House of Usher II is entirely to blame for this train of thought. It was the fact of Stendahl's finding his sanctuary in a robotic world that directly recapitulates nature that stimulated the writing of this curious essay. And yet I think that nothing in Bradbury's cautionary tale is altogether impossible. Robotics may well show itself to be more closely akin to art than science: For over the long term, it will pay the most profoundly human compliment to nature of all — it will imitate it.

Lecht is president of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.





'See! You're Nothing Without My Outlet!'

GETTING AHEAD IN DP/Donald J. Berardo‡

Guidelines Offered for Appraisal Reviews

There is no getting around it — telling staff members how they are doing is part of the manager's job.

Many do a quick review, while others totally avoid their responsibilities, which leaves key problems unsolved. Handled correctly, however, the appraisal review can be one of a manager's most valuable contacts with subordinates.

Setting clear standards for conducting a successful appraisal review is not enough. Your method of handling the review can either motivate or demotivate the employee, can either resolve the difficulties or create new ones.

According to personnel specialist N.R.F. Maier, there are three different ways of conducting appraisal reviews:

- Tell and Sell. The manager uses persuasion to improve the employee's performance, assuming that the employee wants to correct his behavior.
- Tell and Listen. The manager listens to the employee's explanations, allowing him to release any defensiveness and become more receptive to criticism.
- Problem Solving. The manager stimulates the employee's growth and development.

The problem-solving approach is usually used for a positive evaluation; the objective is to create this sort of atmosphere even for a negative appraisal. Some suggestions on how to create such an atmosphere follow:

- Be familiar with the individual. You should modify your approach somewhat depending on such factors as the individual's personality, attitude and abilities. But be careful not to expose yourself to charges of favoritism by treating some employees better than others.
- Be familiar with the facts. Review the performance standards previously agreed upon and all evidence you plan to present during the appraisal. Don't rely on memory, or your criticisms may seem like mere opinions instead of facts.
- Pick the time carefully. Fridays and late afternoons are inadvisable times for appraisal reviews because they allow the employee to stew all weekend or all night. Monday morning is best, and mornings are preferable in general because you then have the chance to speak to the interviewee again the same day and demonstrate your continued interest in him.
- Be attentive during the review. Make the employee feel that there is nothing more important to you at that time than him.
- Be private. No one likes to be criticized in public, and you should respect your employee's dignity by holding all reviews in private and keeping private what transpires.
- Be selective in your criticism. Some faults are more serious than others, and you should present your criticisms in such a way that the employee understands your priorities clearly.
- Be constructive and detailed. Vague criticisms or generalizations are ineffective. Be specific; use examples to support your criticisms.
- Be serious, firm and frank. Humor is out of place in a negative appraisal and may make the interviewee uncomfortable. A joking approach also leaves the interviewee with the mistaken impression that your criticisms are not really so serious.

There are also some things you should not do in an appraisal review. For example:

- Don't attack the interviewee personally. Criticize his performance, not his personality.
- Don't compare the employee with peers who perform better. This creates jealousy and bad feelings.
- Don't overreact. Some employees may become defensive or hostile, tempting you to lose your temper. Always remain calm.
- Don't use the word "always." If you accuse the employee of always being late on projects or always making programming errors, you give him the chance to dismiss your criticism by thinking, "It isn't true that I always do such-and-such."
- Don't sacrifice leadership for friendship. Strive for your employees' respect, not their friendship. That's the best way to get the job done in your department, which is your first priority.

Finally, the most effective sequence of presentation in an appraisal review is to discuss the employee's weaknesses first, followed by an evaluation of his strengths and your expectations of him in the future. This allows the interviewee to leave with a clear sense of what must be improved, while also realizing that you believe he can perform better in the future.

Berardo is a management counselor and career therapist. He is a vice-president with the Meld Group in West Hartford, Conn., publishers of a monthly newsletter on management development.

IF

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THE DATA CENTER

MIS Steering Committees: Shifting Burden

Many organizations have attempted to develop the utilization and effectiveness of their management information systems (MIS) functions through the establishment of an MIS steering committee. While there have been some notable successes with steering committees, there have also been a number of failures. There are, of course, also a number of organizations that have never tried the approach.

The value of an MIS steering committee, not only to MIS but to the entire organization, can be so positive that every effort should be made to install and maintain an active MIS steering committee.

The great value, from the perspective of the MIS manager, is that the burden of making choices about which projects will be given attention and how MIS resources will be used can be shifted from an individual (the MIS manager) to the members of the steering committee.

The MIS manager who is forced to make unilateral choices about which MIS projects shall be undertaken faces an intolerable situation. No MIS manager is sufficiently knowledgeable about all aspects of the business to make such choices in an informed manner. Being given direction on these issues may appear to signal a diminution of the power and authority of the MIS manager.

However, any power of authority that may be lost is more than compensated for by a more appropriate selection from an organization-wide standpoint; the MIS manager working alone simply cannot make project selections that will be as appropriate as those made in concert with others in the organization who represent different business perspectives.

Global View

The primary goal of the MIS steering committee should be to adopt a global view of the allocation and use of MIS resources. The key is to direct the work of MIS to those areas in which the payback will be the greatest.

If the MIS steering committee takes seriously its mandate to consider and prioritize all projects presented for approval on the basis of their particular value to the entire organization, rather than to engage in either the furtherance of a provincialism or in simple horse trading, the benefit to the organization can be significant.

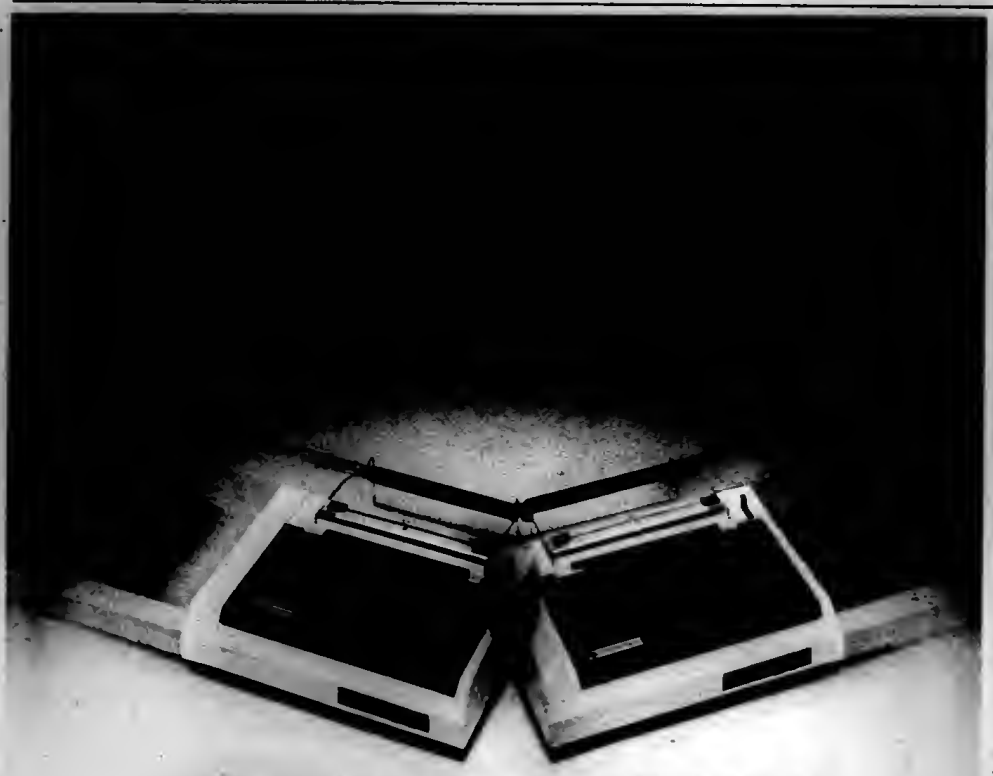
The selection of the members of the MIS steering committee must be based upon both their individual qualifications to serve on the committee and a mixture that will assure representation of all the organization's functions.

From an organizationwide perspective, there are several other salient considerations that will be better served by the MIS steering committee than by an individual effort on the part of the MIS manager.

The committee can provide an excellent vehicle for increased communication between MIS and its clients. The members of the MIS steering committee, through their participation on the board, will gain an improved knowledge of the work being done by the MIS department and will also develop an empathy for the problems encountered by MIS as it attempts to carry on its responsibilities.

The members of the MIS steering committee should use this increased knowledge and understanding of the MIS function to open lines of communication between MIS and those MIS clients each member of the committee represents.

This can be effective because these members of the committee share the same in-



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John P. Murray‡

Of Responsibility From Managers to Groups

terests and concerns as these clients, and because they do have common interests, the members of the MIS steering committee will have more credibility with the clients than MIS itself.

Effectively used, the MIS steering committee can become an excellent method with which to increase the individual knowledge of members about the processes involved in MIS.

This does not mean that the committee members must gain extensive technical knowledge, but they should devote sufficient effort to the committee assignment so that they can become comfortable with the terminology, can understand both the benefits and pitfalls inherent in MIS and, perhaps most important, can discern where the effective use of the technology can take the organization.

Who Should Serve

Who should serve on the MIS steering committee? Ideally, the steering committee should be composed of members of the most senior management level in the organization. As a practical matter, it is not very often that this group of executives will agree to committee membership.

It would seem that as the importance of MIS within the organization becomes more apparent, this reluctance will disappear. But if the highest level of management cannot be persuaded to join the committee, the highest possible level of management should make up the committee. Where practical, the members of the MIS steering committee should report directly to the senior management group.

If the committee cannot be constituted with senior management level people, those who are chosen should view the opportunity as a plus for their careers.

Clearly, the use of information processing, in all its various forms, is becoming increasingly pervasive throughout all organizations; those outside of the MIS department who have an opportunity to gain knowledge of MIS will find they have an advantage as they work to move ahead.

It is correct that an MIS steering committee does indeed require time and effort on the part of its members. However, the steering committee, properly structured, made up of strong, interested members and with the support of the organization's leaders, benefits all concerned. MIS clients, the members of the MIS steering committee, the MIS department (particularly the MIS manager) and, most important, the entire organization can all enjoy improvements from the work of the MIS steering committee.

Those MIS managers who have strong effective MIS steering committees are fortunate. Those MIS managers who must work with weak or indifferent steering committees should work to strengthen them. Those who do not have an MIS steering committee should begin work to develop such a group.

Murray is director of MIS for Ray-O-Vac Corp., Madison, Wis. He is responsible for worldwide MIS activities. Murray has 21 years of DP experience, 10 of which have been devoted to the management of data centers.

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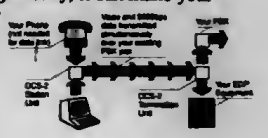

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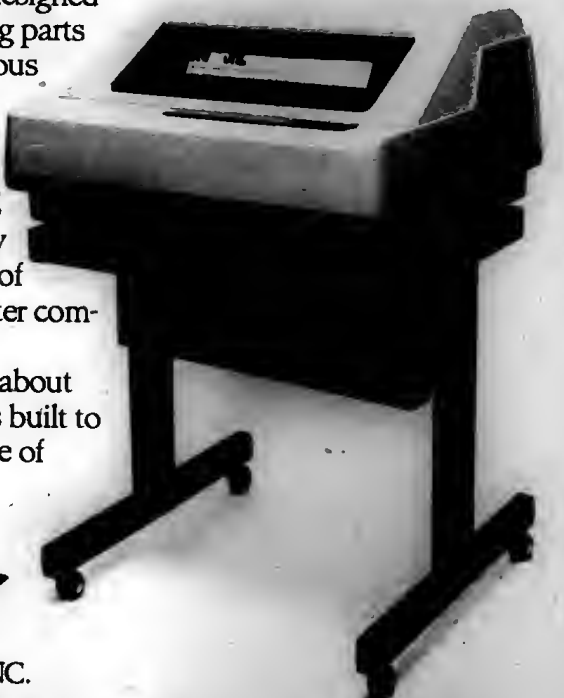

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READER COMMENTARY/Thomas K. Christo‡

DP Contracts Don't Leave Users Defenseless

My 10 years' experience as a trial lawyer representing users in computer-related disputes has given me a viewpoint entirely opposite to that expressed by James J. Marcellino and John M. Conley in their reader commentary "Negotiate Contract Clauses at the Beginning" [CW, March 21]. Lest some hapless user be misled, it is necessary to present the opposite view.

At the outset, the statement that "the contract itself is the significant 'fact' because the contract determines the standard by which the parties' performance will be measured" is incredible to me.

Typically, DP contracts bear little or no reasonable relationship to reality. This is so because these contracts are generally preprinted affairs and are remarkably similar from vendor to vendor; there is generally little room for negotiation or modification of the preprinted language, at least when you're dealing with a major vendor; and the preprinted language in the contract typically contains a plethora of exculpatory language and disclaimers of liability of any sort.

If you take the trouble to read the average major-vendor preprinted DP contract, you will note that the obligation on the part of the vendor is typically only to deliver a box with the serial number that, when plugged in, gets warm. There is usually a disclaimer that the system, regardless of its price and regardless of what was promised, can do any useful function whatsoever.

Such exculpatory language and preprinted contracts are certainly not unique to the data processing industry. A vast body of law has developed over the centuries to address what really happened between the parties. It is known as the law of private wrongs, or tort law.

Thus, while there may be no standards in a contract that will measure a vendor's performance, common law of fraud, negligence and misrepresentation will afford a legitimately aggrieved user his remedies — regardless of what the contract says.

'The Mining Question'

In recent years, so-called consumer-protection statutes, or "baby acts," have also provided significant remedies to aggrieved users. One must bear in mind that at the heart of any legal dispute is what I call "the mining question," that is, "who got the gems and who got the shaft?" Reduced to its simplest common denominator, the law's purpose in any trial is to answer the mining question.

If the contract does not shed any light on resolution of the question, it can and will be ignored or avoided (under a doctrine called rescission, for example).

So the discussion on negotiation, while interesting, is rather beside the point. If you are dealing with a major vendor, you generally have very little room for negotiation of the clauses that most significantly render the contract document an exercise in protection of the vendor's interest and exclusion (to the extent it can) of any user rights and remedies whatsoever.

All of the typical contract clauses referred to by Marcellino and Conley are typical vendor clauses. While trial lawyers who represent vendors may well want such clauses, I can tell you with a high degree of certainty that user advocates certainly do not.

Following, by each clause mentioned, is the user advocate point of view:

● **The Integration Clause.** In stating that the agreement is the entire agreement between the parties, this pro-

(Continued on Page 74)

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User Advocate Point of View of DP Contracts

(Continued from Page 73)

vision seeks to exclude any statement not within the contract. Since the contract typically disclaims that the product or services provided thereunder are fit for any useful purpose, the hoped-for effect is to exclude a variety of precontract promises, proposals and promises made to induce the sale. An integration clause typically seeks to remove the contract from any rational relationship to the reality of the deal that was actually struck between the parties. Upon being faced with a legitimate grievance, the user must look to tort law to submit evidence and prove that he was in fact lied to, negligently treated or dealt with in a deceptive or unfair way.

● **The Safe Harbor Provision.** Another vendor ploy, this acknowledges that a party signing the contract has read it, understands it and was advised by counsel. When faced with a preprinted contract that you must sign on a take-it-or-leave-it basis, the fact that you have read it is of little consequence. Rather, the quoted provision is used as ammunition by vendor lawyers to argue with a straight face in court that you truly negotiated a deal with the vendor and may not now be heard to complain, notwithstanding scores of promises and representations about the capabilities of the product which, in reality, induced you to enter the deal. Once again, tort law, and not the contract, will afford the aggrieved user his remedy.

● **Contractual limitations on the time for bringing an action** also seek to insulate the vendor. In many situations, true implementation of the system (and thus an opportunity to discover defects) can take months or even years. By artificially limiting the time within which the user may bring suit to, for example, six months or one year from delivery (and not implementation), vendors hope to evade liability successfully.

● **Governing Law and Forum Clauses** generally represent an attempt by the vendor to choose the most advantageous forum and law available to him. For example, if a New York vendor makes a sale to a North Carolina user, but specifies that any suit must be brought in a New York court, the advantage to the vendor and disadvantage to the user are obvious. While choice of law (but not necessarily forum) provisions will generally be honored with respect to the contract and its interpretation, there are many other choices left open.

For example, choice of which state's law will apply for purposes of tort complaints will typically be made on the basis of which state has the most significant interest in the outcome of that aspect of the lawsuit, regardless of what the contract says. This can be a very important distinction.

● **Waiver of Jury Trial Clauses** are (thankfully) generally not utilized in vendor preprinted contracts. While it may be "generally quicker to proceed to a trial before a judge with a jury," as Marcellino and Conley suggest, quicker is not necessarily better. First, judges have no corner on intellect (notwithstanding the authors' suggestion), and a jury is equally well-equipped (if not more so) to judge the dispute.

Second, judges are typically a rather conservative lot. They tend to look to the contract and foreclose a good deal of evidence from their minds when deciding who is wrong and who is right. Juries tend to take a more commonsense approach, in an effort to answer my mining question.

Third, judges are typically overworked and underpaid. Seasoned judges can often become rather jaded, foreclosing the party from making arguments before he has had a chance to develop them fully. With a jury present, however, a judge is more or less forced to sit patiently and let the evidence develop before a decision can be made.

Finally, most (if not all) significant user judgments against vendors have occurred after a jury trial. This not only serves as a settlement motivator, but it affords the user some comfort that he will get a fair, impartial and interested audience to his dispute.

● **Rights and Remedies Clauses,** which run from total disclaimers to provision of liquidated damages, are once again another way the vendor seeks to insulate himself and remove the contract from any rational relationship to reality. If a user is purchasing a computer system that controls every aspect of his business, some nominal liquidated damages provision or a limitation up to the amount of the purchase price is woefully inadequate. Upon some significant failure or failures of the system, the user could literally be out of business.

It is true, as Marcellino and Conley state, that "a liquidated damages provision will generally foreclose all other forms of damages" with respect to breach of contract claims. However, the law has thankfully in its wisdom maintained tort theories of recovery as well as the newer statutory theories I referred to in the beginning of this article to afford a legitimately aggrieved user some measure of justice.

Christo, a former litigator, is a computer litigation consultant in North Hampton, N.H.

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Keyboard	3	5	3	4	5
Rollover/false keying	5	5	3	4	4
Video Quality	1	5	4	4	3
No. of attributes	5	5	5	2	5
Attribute method	3	5	3	4	2
Suitability for macros	3	5	3	5	3
	24	30	25	30	27
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*MICROSYSTEMS—March 1983
**THE ERGONOMICS NEWSLETTER—August 1982

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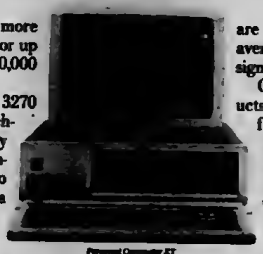

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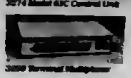

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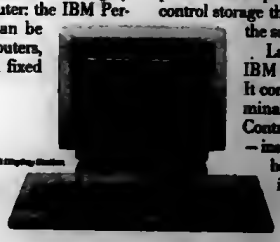

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READER COMMENTARY/Christopher J. Duckenfield‡

Politics and High Tech: The Kiss of Death?

The less charitable among us might assume that the press promotes an idea for the sole purpose of having something to debunk in later issues. Supporters of the press might refer to it as balanced reporting. The reporting on high technology over the past few months has been balanced in the same sense a seesaw is balanced — by heavy weights at two opposite extremes.

The late 1982, pre-Christmas, boost retail sales, upbeat-America reporting was highly favorable to computers. Politicians cannot resist the temptation to leap onto every passing bandwagon, and President Reagan's sudden discovery of an honest-to-goodness, made-in-California, get-rich-quick, something-the-Russians-cannot-make bandwagon almost ensured that a good number of people were going to jump off of it and start throwing rocks at it.

Sure enough, Christmas is long gone, the next presidential election is less than two years away, and the bloom is off the high-tech rose. High technology is all tangled up with the only thing that can make American politicians look beyond the next six o'clock news — the next election.

The president's foray into the unfamiliar territory of Massachusetts' computer and university stronghold around Boston had all the hallmarks of an earlier visit to the area. Here we had a latter-day pilgrim, pure in economic spirit, but in danger of not surviving the winter, finding that the savages of the Northeast offered the means of getting through the hard times. He might even survive to convert those same savages. All he had to do was nurture the fledgling computer companies, fertilize them with a few tax breaks and stand back and watch them save the country.

The president made a speech and proclaimed himself all for high technology and computers. Wow! The computer industry executives in attendance could hardly contain themselves. The Promised Land opened up before them, flowing with U.S.-made chips and computers, the specter of the barbarian Japanese finally blown away.

Two-Edged Sword

Alas, a presidential endorsement can be a two-edged sword. Uninterrupted paeons of praise can be tolerated so long as only minor players are involved, but presidential statements demand contradiction. It could only be a matter of time before a backlash against the high-technology industries set in. The president's visit to Massachusetts was the zenith of unalloyed support for high technology.

As the country staggered into 1983 and the 1984 presidential campaign ground into first gear, the backlash had started. People who are out of work or have fears of being put out of work cannot be expected to take a long-term view of the economic situation. Politicians running for reelection cannot be expected to ignore the concerns of their electorate and are unlikely to take a long-term view either.

Speaker of the House Tip O'Neill (D-Mass.) quite boldly stated that high-technology industry would not be promoted at the expense of the traditional smokestack industries, this in quick response to the president's visit to the speaker's home state.

Computer industry leaders are mistaken if they think that a favorable presidential speech signifies the end of their political problems. A lot more lobbying and education remains to be done.

If the computer industry expects preferential treatment, it will need much better press than it got over the recent decision by Atari Corp. to move part of its manufacturing operations to the Far East.

The Atari decision was just the excuse the press needed to begin the flow of anti-high-tech articles that have started to appear. It seems as if every columnist now has to write a "High Tech Not Solution to All Problems" article.

We must hope that all the fuss dies down before some irrevocable political decisions are made that damage the computer industry. While the industry needs political action taken on some of its problems, that action will be better taken outside the spotlight. Maybe industry leaders will have learned the lesson that while hobnobbing with political bigwigs provides a boost for their egos, it also puts the industry on the firing line, where it cannot afford to be.

No industry can expect to get only good publicity, but the computer industry can help itself and minimize the bad publicity by concentrating its public-promotion efforts on expounding the benefits of computers to the populace as a whole and being a little more discreet with its politics.

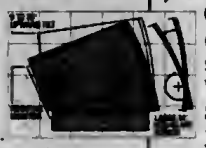
Duckenfield is director of the computer center at Clemson University, Clemson, S.C.

WE'RE ALWAYS HAPPY TO PUT IN A PLUG FOR IBM.

The new IBM plug-compatible CIE-7800.

Early this year, IBM introduced the 3178 as a less feature filled, less expensive alternative to their old 3278 Model 2 terminal.

The new CIE-7800 is a far better alternative.

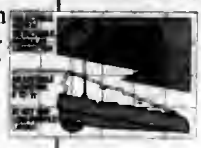


Because in one CIE-7800, you not only get the 3178 but all *five* models of the 3278. Yet, it is even lower priced than the 3178.

And when it comes to human engineering and design, there is absolutely no comparison.

The CIE-7800 is far more user oriented and compact. It has a footprint of only one foot by one foot. It has a larger, more readable 14-inch screen. Among its unique features are a printer interface and a bi-level, software activated security lock. Plus, it is designed to meet European standards. And it also offers international character sets.

Even more, depending upon your system's requirements, the CIE-7800 is available with concurrent alternate personalities, such as DEC® VT100, Burroughs TD 830/983/986, and IBM 3101-3104 and IBM 3275/3276-2 bisynchronous capability, while still retaining IBM 3178/3278 compatibility.



The CIE-7800 is, indeed, a whole new class of one, setting whole new standards for the industry. It's a terminal that could come only from the manufacturing experience and the financial resources of C. Itoh & Company Ltd., with well over $50 billion in sales throughout the world.

To learn more about the CIE-7800, just contact our exclusive representative. ACM, Inc., Suite 540, 3857 Birch St., Newport Beach, CA 92660. Or call toll-free 1-800-854-5959. In California, call 1-800-432-3687.

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Clearinghouse Allows Members To Trade Software

By Bob Johnson
CW New York Bureau

MONTCLAIR, N.J. — If unused or obsolete software is collecting dust around your DP shop, do not despair.

A nationwide clearinghouse for used software has recently been introduced here, and according to its founder and president, Samuel E. Bleecker, users of both small and large systems will now have a place to trade their unwanted software for new or more appropriate programs.

The National Software Exchange (NSE) will permit individual users to join for an annual fee of $75. Institutions and companies will be charged $250. Members will be able to exchange software through the clearinghouse for a handling charge of $5, according to Bleecker. Software submitted to NSE is tested for quality and checked for proper documentation, the company president noted.

Although the NSE's initial concentration is on the home and educational software market, starting with nearly 100 pieces of software inventory, Bleecker maintained that the computer industry as a whole is in need of a place where it can test and exchange software conveniently and at a low price.

(Continued on Page 84)

Spreadsheet Introduced For Users of IBM's TSO

IRVINE, Calif. — A spreadsheet package for users of IBM's TSO running on IBM 370, 4300 and 30 series and plug-compatible mainframes has been announced by the Mega Group, Inc.

Called Megacalc, the product supports IBM 3270-type monochrome or color terminals. Screens can be split vertically or horizontally into as many as 100 windows, allowing simultaneous displays of different spreadsheet sections.

The matrix is 702 col. by 999 rows. Column widths ere variable and can be altered individually or as a group. Individual columns can be repeated, deleted or rearranged, e spokesman said. Headings can be up to 80 characters in length.

Worksheets can be transferred from Megacalc on the mainframe to microcomputers running Visicorp's Visicalc. In addition, spreadsheet models developed on Visicalc, Sorcim Corp.'s Supercalc, Context Management Systems, Inc.'s Context MBA and Lotus Development Corp.'s Lotus 1-2-3 can be transferred to the mainframe via Megacalc, the spokesman said.

Standard features include more than 80 built-in mathematical functions, protected cells, hidden columns and cells, manual and eutomatic recomputing to 16-digit accuracy and variable printed report formatting.

The software is available on e lease basis for $400/mo. Mega Group is at Suite 100, 2091 Business Center Drive, Irvine, Calif. 92715.

Resides on CMS Minidisk

'Panvalet' Modified for VM

OAK BROOK, Ill. — Pansophic Systems, Inc. has announced an IBM VM version of its Panvalet library control system.

Panvalet/VM is e library structure that resides on an IBM CMS minidisk and provides communications between the library end CMS work files, e vendor spokeswoman said. The product provides e CMS interactive command processor to retrieve, store and display programs to the CMS environment for program development.

The CMS command processor is integral to Panvalet/VM, addressing the characteristics of the user, the spokeswoman said. It is the primary programmer's tool for the CMS user.

Panvalet/VM is priced at $10,000 for DOS sites and $15,000 for OS sites. Pansophic is at 709 Enterprise Drive, Oak Brook, Ill. 60521.

Harlequin Lives Happily With Modeling Package

TORONTO — Just as its heroes and heroines ultimately find happiness at the end of the 100 million books it prints each year, Harlequin Enterprises said it has solved its decision support dilemma by installing a software package.

The modeling tool chosen by the publisher's North American Book Division here was the Financial and Corporate Planning System/Evaluation and Planning System (FCS/EPS) from EPS Consultants in Toronto.

"For the past year, Harlequin has been building a modeling system to address the company's international business, including marketing effectiveness, accounting structures, financial management and business forecasting," Eric Brown, Harlequin information analyst, explained.

"The modeling process was inherently complex due to the large number of elements within the organization. The company uses wholesale, direct billing accounts, subscription and casual marketing channels for both retail and direct marketing methods in the U.S. end Canada," Brown said. "Each of these eight marketing channels could have 25 potential product lines. The modeling system, then, could have up to 200 base sections representing the lowest level of profit and loss statement for the division. As the primary source of marketing information, the modeling system would be called on to produce financial reports for each section

(Continued on Page 86)

Three Reasons System/Manager Stands Alone

No other DOS/VSE) resource management system comes close to Corodale's System/Manager for overall ease of use end hardware efficiancy. It's the complete resource menager. Because of three perfectly integrated components.

Space/Manager
Improves disk space and disk file control. Increases capacity by up to 50%.

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Controls tape allocation end usage. Minimizes clarical time, ensures security and integrity.

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In just 15 minutes, System Manager can be up end running, paying for itself. And its modularity means you won't outgrow it, it won't outgrow you We'll even let you prove all this in your own environment for a full 27 days.

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C Corodale Systems Software

IBM CICS Version of 'Telon' Out

QUINCY, Mass. — Christensen Systems, Inc. has announced an IBM CICS version of Telon, its applications development productivity system.

Said to be compatible with the current IBM IMS-DC version of Telon, the CICS version supports IMS access of IBM's DL/1, as well as of IBM Vsam files. It runs on IBM and plug-compatible systems under the OS operating system.

The Telon software consists of a screen design aid component, an applications system generator and a test facility. It reportedly supports the system development life cycle from design through programming, testing and maintenance. An optional Telon methodology ties the three components together to organize further the applications development process, the vendor said.

Telon has no runtime monitor or interpreter, the vendor said. The source programs are generated in CICS Command Level Cobol or PL/I and are independent of the generator.

Users have the option of maintaining the programs separately from the development system, although the vendor noted that greater maintenance productivity is achieved by continuing to use the Telon software.

The Cobol or PL/1 programs generated run in native CICS mode or under the Telon test facility. The generated components for a production program are said to include a Cobol or PL/1 program with the protocol for interfacing with CICS and, for DL/1 files, Program Specification Block source code.

The CICS version of Telon, which is compatible with CICS/VS Version 1 Release 5 and above, is available for a one-time license fee of $40,000. It includes the screen design aid and a one-language applications generator. A second-language (Cobol or PL/I) generator is $15,000. The Telon CICS test facility is $10,000.

The one-time license fee for the IMS-DC version of Telon is $90,000 and includes the screen design aid, applications generator and interactive test facility.

Christensen is located at One Heritage Drive, Quincy, Mass. 02171.

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Watch for Theme #6

Leasing available.

KW CONTROL SYSTEMS, INC.

'Monitor' Detects, Measures Extent Of CICS Problems

ALEXANDRIA, Va. — Landmark Systems Corp. has released Monitor, an IBM CICS performance measurement software package designed to identify potential CICS resource problem areas and measure the extent of the trouble.

Monitor provides color graphics on IBM 3279-type terminals with no additional devices and monochrome graphics on IBM 3270-compatible terminals, the vendor said.

Operating systems supported by Monitor include IBM's DOS/VSE, MVS and VS1. The software requires 30K bytes of resident memory. Graphically, Monitor allows up to 20 target areas to be displayed simultaneously. The user can select desired targets from the 26-item menu or resort to intelligent defaults, the vendor said. When a chosen CICS threshold is exceeded, data center personnel are alerted via an audio or visual alarm.

Monitor is available today through a variety of purchase and rental options for under $10,000, Landmark said from 4701 Upland Drive, Alexandria, Va. 22310.

IBM Updates DMS/CICS/VS, Reducing Exits

WHITE PLAINS, N.Y. — IBM has announced a new release of its Development Management System (DMS)/CICS/VS application generator, designed to improve productivity in the implementation of CICS/VS applications.

DMS/CICS/VS is written in 370 assembler language and was designed to run on IBM and plug-compatible systems under OS and DOS that support CICS/VS Release 1.5 or later, according to IBM.

Version 1 Release 4 of DMS/CICS/VS reportedly includes capabilities that reduce the need for a user to exit to a traditional programming language and improvements in ease of entering descriptions of application programs.

The release is said to incorporate several new edit functions and data modes, as well as new options for the protection of user files.

Other highlights of the new release, IBM said, include simplified installation, which eliminates several steps and consolidates other options into one module, and expanded documentation, including users guide, problem determination guide and application examples.

The monthly charges for a basic license for DMS/CICS/VS are $290 for an OS version and $163 for a DOS version. The monthly charges for a basic license for the application generation feature are $395 for the OS version and $244 for the DOS version.

The monthly licensed program support charge is $48 for both OS and DOS versions of the product, according to the vendor, which is located at 1133 Westchester Ave., White Plains, N.Y. 10604.

THE DAY THE NETWORK ATE WALL STREET.

If yours is a Wall Street kind of business, you live by the following rule: To keep the business going, keep the information flowing. Moving information over a network you can't control, can lead to business problems you can't tolerate.

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They depend on Intertel for integrated Network Command Center systems to coordinate and monitor all network activities from central sites. Intertel's state-of-the-art Series 90 provides everything they need to control, manage and measure the performance of their networks. They can test network components, execute restoral procedures, maintain management databases, and analyze data streams—all without interrupting network service. With Series 90 they have the facts they need to resolve network problems, before they become business problems.

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Goal Updates 'Faver/XP' With Support for MVS/XA

COLUMBUS, Ohio — Goal Systems International, Inc. has announced IBM MVS/XA support for IBM OS/VS users with Release 4.6 of Faver/XP, an IBM Vsam backup/restore utility. The release also includes Quick Catalog (Quicat), a catalog information display facility and comprehensive file integrity tool.

Faver/XP Export facilities provide up to a 50% reduction in backup time over standard Vsam utilities, a spokesman said. The product also offers support for IBM Data Facility/Extended Function catalogs on MVS and MVS/XA systems.

The Quicat utility eliminates the need to use the IBM Access Method Services Liscat utility, the company claimed. It reportedly uses less paper with faster execution times and includes an interface to IBM's TSO. Users can request Quicat to display specific information for any cluster or group of clusters using a generic scanning facility. Quicat also pinpoints the time a cluster is created and when it was last updated.

The file integrity feature performs error analysis of all critical catalog and cluster information. As each Vsam cluster is exported it is inspected for errors. A compare facility allows Faver/XP exported files to be compared byte-for-byte to the records on disk.

A permanent license for Faver/XP costs $5,040 or $126/mo for a three-year renewable license. The company is located at 5455 N. High St., Columbus, Ohio 43214.

On-Line Editor Added to 'Phoenix'

COLUMBUS, Ohio — Goal Systems international, Inc. has unveiled a full-screen, on-line editor with Release 4.0 of its Phoenix computer-based training system for IBM and plug-compatible mainframes.

The enhancement provides COPY, MOVE, SAVE and PUT commands. Phoenix has also been enhanced to include expanded on-line inquiries that allow student records to be viewed alphabetically or numerically.

Phoenix also offers an IBM VM/CMS interface. An Easy Authoring System for Education facility allows nonprogrammers to write courseware, the spokesman said. The facility includes prompts, and all instructional items are linked to author-defined behavioral objectives.

Phoenix also operates under IBM's MVS, VS1 and SVS operating systems. A monthly license fee costs $875 with a presentation version available for $250/mo from Goal, 5455 N. High St., Columbus, Ohio 43214.

'Wizard' Extends Banks' Abilities To Do Searches

BREWSTER, N.Y. — DSA Data Systems, Inc. has unveiled a service for financial institutions called Wizard, said to provide banks with the capability to search central information files through a phonetic name search or alpha lookup, even if little is known about an individual.

Depending upon the amount of information available, Wizard will display all names within a certain percentage of likaness desired. Correct spelling is unnecessary as Wizard functions on the basis of a name's sound.

Wizard was designed to run on IBM System/3, System/34 and System/38 under the standard IBM operating system, a spokesman said.

A perpetual license for Wizard costs $2,500 from DSA, Milltown Office Park, Rt. 22, Brewster, N.Y. 10509.

HP 7221 Plotters Get 'Quickdraw'

TORONTO — I.P. Sharp Associates, Ltd. has announced Quickdraw, a production plotting package for Hewlett-Packard Co. 7221 series plotters. The product can be installed in-house on an IBM 370 or plug-compatible mainframe running I.P. Sharp APL.

Quickdraw is also available via time-sharing.

Quickdraw produces line plots, scattergrams, pie charts, high-low-close plots and various histograms. Dashed lines, hatched areas, damping of irregular lines and pictures at observation points can be used.

Text can be placed around the graph, and axes with variable lengths can be drawn around any of the sides confining a plot, a spokesman for the company said. The package can also produce overlaid plots and transparencies.

Time-sharing charges are $1/hour connect time, 70 cents per thousand characters transmitted or received and 25 cents to 45 cents per CPU for a perpetual license fee of $10,000 and $1,000 annual maintenance or a $400/mo license fee.

The company is located at Suite 1900, 2 First Canadian Place, Toronto, Ontario, Canada M5X 1E3.

Raytheon introduces an processor designed

We were there at the birth of modern word processing. So it should come as no surprise that when we designed the Raytheon information processor, we didn't forget that human beings come with backs, arms, fingers, necks, eyes and other assorted parts. And use them in different ways to do different jobs.

That's why we designed our RDS-200 Series of information processors to adapt to human anatomy, instead of asking people who operate our system to adapt to us.

The result is an ergonomic information processor that is one of the most comfortable and easiest to use.

And without a doubt, a most productive addition to the office.

Besides being human engineered, it's also versatile. For example, it can converse with a variety of other word processors, host computers, and mini and personal computers. And with readily available CP/M® software, it can perform just about any office data processing job.

Planning for shared resources, clustered word processing and, finally, a fully integrated office system? Look to Raytheon, the company with more than a dozen years of experience in designing products that increase office productivity.

For more about our extraordinary information processor, the RDS-200, call 800-343-6676; in Massachusetts: 617-762-6700, ext. 3137. Or use the coupon.

We sculpted keys to conform to the contours of your fingers. A small point perhaps, but after hours at the keyboard, you'll feel more relaxed.

Ergonomics Raytheon-style extends all the way to our hydraulic chair. Just the flick of a lever, and it adjusts to support your back and reduce strain and fatigue.

Our display tilts and swivels, so your neck doesn't have to. A little extra comfort can mean a lot of extra productivity.

With 'CA-Jasper/XMF'

DOS/VSE Users Get OS-Like Capabilities

JERICHO, N.Y. — Computer Associates International, Inc. has announced CA-Jasper/Extended Measurement Facility (XMF), said to provide IBM OS-like performance analysis and tuning capabilities for IBM DOS/VSE users.

The company also announced the availability of its CA-Autotab financial planning and modeling language on DOS/VSE systems.

CA-Jasper/XMF features include a facility that enables users to define the combination of residency and execution that best fits their environment. The product allows data to be collected in the on-line XMF files on an event and sampling basis, a spokeswoman said. Operator commands provide dynamic definitions of type, frequency and duration of data collection.

A real-time facility provides sampling and display support from the operator console or any IBM CICS/VSE terminal. Requests may be entered for current system information or snapshots of memory and job status data. The product also provides graphic time-based, histogram or kiviat displays of on-line XMF data through CICS/VSE transactions. Batch analysis capabilities are available.

CA-Jasper/XMF is priced at $6,000 for a three-year lease.

CA-Autotab uses English-like commands, integrated graphics and decision support and forecasting features to create financial prototypes, the spokeswoman said. It can handle an unlimited number of "what-if" alternatives within one model. The product includes built-in business mathematics functions such as present valuing, return-on-investment and depreciation methods. It also includes consolidation capabilities.

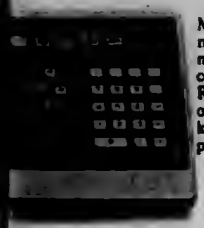
Decision support and forecasting features include exponential smoothing, simple regression, logarithmic regression, backward iteration, risk analysis and goal seeking.

The basic CA-Autotab package costs $25,000. Computer Associates is located at 125 Jericho Tnpk., Jericho, N.Y. 11753.

extraordinary information for every body.

The characters on our nonglare screen are larger than most. And our high-resolution green-on-black screen is easy on your eyes. For convenience, there's a special full-page mode that lets you see exactly how your work will look on the finished page.

With Raytheon, ergonomics is also a way of doing business where people come first. Instead of asking you to send your people to us for training, we send our trainers to your office. And with Raytheon, you have the service backup of more than 1,000 people in 174 offices worldwide.



Most computer companies ask you to memorize multiple keystroke command codes. Raytheon gives you one-stroke command keys—each labeled in plain English.

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Dictionary Backs Focus DBMS

NEW YORK — Information Builders, Inc. has unveiled a data dictionary facility for its Focus data base management system, which runs on IBM and plug-compatible mainframes.

Focus Data Dictionary is designed to serve the formal development requirements of the application center and the audit needs of the information center and to provide a framework for relating the two, the vendor said. Written primarily in Focus, the facility is said to allow users to produce ad hoc and catalogued reports and analyses, customize the data base and produce graphics and statistical summaries.

The data dictionary is menu-driven, captures and maintains system resource usage statistics, generates documentation about the dictionary itself and provides global dictionary maintenance, the vendor noted.

The Focus Data Dictionary is available immediately at a purchase price of $12,000 from Information Builders, 1250 Broadway, New York, N.Y. 10001.

Course Targets Focus DBMS

SANTA MONICA, Calif. — Crwth Computer Coursewares has announced an interactive self-study course for users of Information Builders, Inc.'s Focus data base management system.

"Using Focus" runs under the IBM Instruction System and Goal Systems International's Phoenix System and provides a simulation of Focus. A student workbook is included.

The complete course can be leased for $3,750/year or $7,500 for a perpetual license from Suite 200, 613 Wilshire Blvd., Santa Monica, Calif. 90401.

Order System Fits System/38

CLEVELAND — Pioneer Software, Inc. has announced the availability of its Purchase Order System for the IBM System/38. The system is written in structured RPG III and uses externally defined files.

The system reportedly uses an interactive data base of material/service requisitions, purchase orders, inventory, accounts payable and vendor and buyer history. Features include on-line entry of receipts; computer-generated requisitions, reports and requests for quotations; purchase orders; authorized vendors; and vendor and buyer performance.

The inquiry capability reportedly permits on-line inquiry of requisitions, purchase orders, vendors, inventory, commodities, quality-control receipts and purchase order history.

The Purchase Order System costs $8,500 from Pioneer Software, 4239 W. 150th St., I-71, Cleveland, Ohio 44135.

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Utility Enables CMS to Write to OS Files

RIDGEFIELD, Conn. — A utility designed to enable IBM's CMS to write to IBM OS files has been announced by Adesse Corp.

CMS Read/Write OS (WOS) Direct-Access Storage Device (Dasd) Support reportedly provides write access to OS-format minidisks and dedicated Dasd. This utility supports IBM 3330, 3350, 3370 and 3380 and equivalent services. The Fixed Block Architecture 3370 is supported for common Basic Sequential Access Method, Queued Sequential Access Method and Basic Direct Access Method (Bdam) functions. Access to OS-format data using Bdam reportedly may be directed to employ asynchronous I/O capabilities to permit overlapping I/O and CPU processing.

The vendor explained that CMS has limited capabilities to read data stored in OS-format minidisks, and WOS support allows preallocated data sets on OS volumes to be read and written. In addition, WOS provides access to data set management functions from CMS, which include volume formatting and data set allocation, renaming and erasure.

With WOS, users can format disks to include e standard OS volume label and Volume Table of Contents, and OS data sets may be allocated, written, erased and renamed.

The vendor claimed that performance improvements can be realized for applications that encounter buffer thrashing in CMS or that are sensitive to allocation techniques. The loss of data in the event of a system or virtual machine failure can be minimized since OS file status information is maintained on disk, according to Adesse.

CMS Reed/Write OS Dasd Support is offered with e per-CPU license for e monthly charge of $150. Maintenence is included in the monthly charge. The purchase price for WOS is $5,000. Customers who purchase a WOS license also may subscribe to maintenance for $15/mo.

Further information can be obtained from the vendor through P.O. Box 515, Ridgefield, Conn. 06877.

Fits IBM OS Systems

'Tracmacs' Gets Debugging, Reference Aids

VALLEY FORGE, Pa. — Management & Computer Services, Inc. (Macs) has enhanced Tracmacs, its program path euditor for IBM OS systems. The enhanced package includes the Tracmecs debugging aid and Crossmacs Cobol cross-reference software.

Tracmacs generates data on runtime reports, telling the user which paths have not been taken and which remain to be tested, e spokesman said. The reports also tell the sequence of paths that were faken and the number of times thst true and false branches were executed.

The software provides for an audit of eech program.

Tracmecs is engineered to intercept abnormal conditions that might cause abends or storage dumps and to diegnose or correct the error automaticaily, the spokesman said. Crossmacs helps the programmer follow program logic by giving embedded cross-reference data.

Tracmacs costs $20,000 from Macs at Great Valley Corporate Center, Valley Forge, Pa. 19482.

Informatics Sales Analysis Aid Targets IBM System/23, 34 CPUs

ATLANTA — Informatics General Corp. has announced sales analysis software for IBM System/23 end System/34 processors.

Called the Management Control Systems Sales Analysis System, the product eutomatically produces 20 different reports for analyzing sales representative productivity, customer buying ectivity, sales by product and tax reporting, e spokesman said. On-line data entry is offered and invoice and adjustments can be entered on the same screen.

Sales representative reporting functions include sales analysis, commission calculation end sales performence-vs.-quota comparison. A two-year history of sales and commissions for each customer can be maintained, e spokesman said.

Customer reports include e sales summary that offers e way to compare current sales for each customer with the customer's year-to-date sales, customer sales by product, customer sales forecast end a customer two-year sales analysis.

A product reporting capability generates reports that analyze product sales by customer and by sales representative. Invoice tax analysis is provided by a report that isolates sales tax and other taxes due on each invoice.

The product is priced at $1,100 for the System/34 and $500 for the System/23. More information is available through P.O. Box 723597, Atlanta, Ga. 30339.

Payroll System Out for IBM 5280

LENEXA, Kan. — Marion Computing Systems, Inc. has announced a payroll eccounting system for the IBM S280.

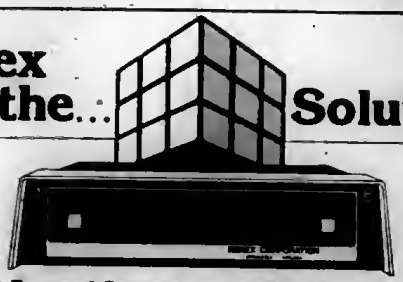
The system provides facilities to handle multicompany processing, entry velidation, employee record maintenance, custom paycheck production, check reconciliation and annuity processing, a spokesman said.

Pay periods can be run at user-selected intervals with current and year-to-date information printed on each check stub. Up to 13 pay types end 15 deduction types are eveilable.

Reports include payroll journal, check register, deduction registers, federal/state/local tax reporting and employee history listings. Employee label printing capability is also included, the spokesman noted.

The system costs $1,500 with a demonstration copy available for $10 from 13021 W. 102 Terr., Lenexa, Kan. 66215.

Renex has the... Solution!



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The Renex TRANSLATOR, a powerful field proven communication controller lets you give IBM 3270 data processing capabilities to more of your personnel for less money. Renex eliminates the high cost of IBM dependence when expanding your 3270 networking system.

The TRANSLATOR can let almost any asynchronous ASCII terminal, CRT, printer and personal computer talk to e host as if it was an IBM 327X or 328X. You can choose from over one-hundred models of terminals—pick the one that suits your needs and your pocketbook.

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- No host software changes
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- Battery backup memory
- Several clocking to 9600 baud
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GENERAL ELECTRIC

MSA's Financial System Gains On-Line Monitoring

ATLANTA — Management Science America, Inc. (MSA) has released a new version of its accounts receivable software system with on-line capability for monitoring marginal accounts. The package runs on IBM and plug-compatible systems under OS and DOS.

The capability allows monitoring of a company's total credit exposure, a spokesman said. A credit search-and-review facility also allows accounts to be searched by a variety of criteria. In addition, the new release features on-line payment reconciliation, national account cash application and electronic cash application, the spokesman said.

The product will be available in September at a price ranging from $50,000 to $125,000, depending on operating system and configuration from MSA at 3445 Peachtree Road N.E., Atlanta, Ga. 30326.

DP Clearinghouse Opens

(Continued from Page 77)

"Traditionally, in all software markets such as film or records, the user has an opportunity to sample or review the products before they are actually bought. This is not yet true of the computer software market," he said. "Although some magazines are reviewing software, most reviews are inadequate unless the user reading them has some hands-on experience with the program.

"In addition, the software area we are beginning with — the home market — requires an average pay-out of about $35. This is expensive for the average consumer," he said.

Bleecker maintained that the NSE will fill this product testing gap by providing an avenue of distribution where users can get the software they need easily and inexpensively. He said the NSE will minimize the purchase risk involved in buying expensive software because the user will gain equity if he can trade it later on.

Bleecker added that the project also recycles shelved software that is more valuable to a user other than the original owner.

The NSE's main thrust into the business minicomputer and microcomputer business software market will be through a newsletter called "Swap." Bleecker said that Swap's primary function will be to advertise hardware and peripherals as well as software, so the businessman will have a method of trading for what he needs. "Swap will list sought-after items and those offered for sale by NSE members," Bleecker added.

The NSE president said that he sees his organization serving users of large systems as well as users of small computers. "For example," he said, "we have gotten calls from people in the business community with [Digital Equipment Corp.] PDP-11/70s and minicomputers who are interested in designing systems for their hardware. They want to know if any other users have already done this kind of work and if the software is available.

"This concept will work for data base management systems, word processing systems, statistical analysis packages or just about any other application you can think of," Bleecker said.

Another reason the NSE is suitable to business, he added, is that both large and small DP shops at some time in their evolutionary cycle "grow out of their current software and move on to another need."

The introduction of the microcomputer into the corporate environment also supports the need for a software exchange avenue, according to the NSE president. He said that large companies' microcomputer managers have been responding to the NSE's sister venture, the Software Library, by renting available microcomputer software for comparison purposes.

He expects that as the microcomputer makes further headway into large companies and software libraries for these systems grow, the need for the NSE will increase proportionately, he said.

When asked if the NSE is feasible for very large system software swapping, Bleecker responded positively. He said that most companies have made major investments in their software systems, and it is "foolish" for them not to recoup some of that investment in the event that they outgrow the software.

"The large system computer software after-market is a reality. Say that a company designed its own payroll system for its IBM environment and then found that it needed a larger or more efficient system," he said. "By using the NSE, the company now has an outlet to communicate with other IBM users who just might need a payroll system. A swap or a payment arrangement could be made."

Statistical Tool Gets Revision

SAN RAFAEL, Calif. — Systems Applications, Inc. has announced a revision of its BMDP statistical package for Prime Computer, Inc. computers.

Features of the revision include a new program, P1T, for univariate and bivariate spectral analysis; two new commands to simplify specification of repetitive instructions; and improved diagnostic messages for control language errors.

BMDP is a library of statistical programs supporting a range of analyses, including data description, time series analysis, frequency counts, analysis of variance, regression analysis and multivariate techniques.

The package is available on an annual lease basis for $750 to academic users, $1,500 to government or nonprofit users and $2,250 to commercial users and service bureaus.

More information is available from the vendor at 101 Lucas Valley Road, San Rafael, Calif. 94903.

SAS/FSP Gives You FSCALC...

Publisher Happy With Package

(Continued from Page 77)

including currency conversions and rolling financial forecasts. At the same time, the system needed to be flexible, computationally efficient, easy to use and able to meet new needs with simple maintenance," Brown said.

"Our planning process is fairly dynamic, based on changes in both the marketplace and philosophy of management as demonstrated by the fact that the model has gone throogh five generations in three years," he said. "And thus, the model must allow a novice FCS-EPS user to implement the majority of changes with simple coding facilities."

Working via TSO on an IBM 3081 at the Datacrown Service Bureau of Willowdale, Ont., Brown used the Harlequin FCS-EPS system to create the base model he needed to meet all of these criteria. Using the basic Business English logic approach of FCS-EPS, he structured the system in five modules from preprocessors to cash flow and balance sheets.

"Today, a nonprogramming user is able to make all his requests to the system and subsequently generate his own reports. The modular structure allows the operator to use just the portion or subportion of the system he actually needs," Brown said.

The system generates three types of profit-and-loss statement reports: monthly and quarterly period reports, reports for markets with submarkets as columns and for submarkets with product lines as columns and reports for submarkets with product lines as columns. These reports cover all possible product line submarket consolidation sections. Currency exchange information is provided on all reports.

Now, top-line decision management, market management, product management and financial control groups receive up-to-date information by product, marketing method, country and marketing channel from the base-section level up to the division level. Analysis is possible monthly, quarterly and annually, including 12-month rolling forecasts. Managers can examine products by marketing method, marketing method by product, marketing method by country, marketing channel by method, products by channel and channel by product.

Since FCS-EPS can be used on personal business microcomputers as well as on minicomputers and mainframes, personal computers are being introduced to product managers so they can do "what-if" analysis by varying the input elements over which they have control, Brown said.

Brown said he is investigating new FCS-EPS features that may help simplify the driver system — the interactive interface between the operator and the modules — through subroutines and full-screen input features. The new FCS-EPS Interactive Database System (IDS) should help simplify file maintenance functions, Brown said. With IDS, a user may maintain specific data for inquiry or analysis. IDS data base information may be accessed in selected combinations or in dimensional views by other FCS-EPS facilities.

Carleton Announces Version Of 'Auditec' for Honeywell

BOSTON — Carleton Corp. has announced the release of Auditec/Honeywell, a version of its Auditec software for program development, information retrieval, report writing and auditing.

Auditec/Honeywell reportedly offers the same information retrieval capabilities to Honeywell Information Systems, Inc. Series 6000, Level 66 and DPS 8 machines running under Gcos. It is written in Cobol-74 and will access all files accessible by Cobol-74 and Cobol-68 file types, including Honeywell Indexed Sequential Processor and General File Record Control files.

Auditec/Honeywell is built around a data dictionary that allows the user to define files, records and fields just once and to incorporate automatically the definitions into future programs.

Also announced was an interface for the Honeywell Integrated Data Store (IDS-II) data base management system said to allow users to access IDS-II files with the same commands used to access any other file type.

Auditec/Honeywell ranges in price from $22,000 to $44,300; the optional IDS-II interface costs $7,000. Carleton is located at 44 Bromfield St., Boston, Mass. 02108.

'Total' System Targets TI Users

COLUMBIA, S.C. — Computer Systems Architects, Inc. has announced the Total Manufacturing System for Texas Instruments, Inc. Business System 600 and 800.

Written in Cobol, the package was designed to operate in conjunction with TI's DBMS network for use with TI's query report writer. Features include purchase-order handling, job costing, project estimating and materials handling, the vendor said.

The software costs $30,000. The TI Business Systems cost between $50,000 and $150,000, depending on configuration. Computer Systems Architects can be reached through P.O. Box 12276, Columbia, S.C. 29211.

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'Udraw' Package Now Ready for HP 200

STAMFORD, Conn. — Sparacino Associates, Inc. has announced that its Udraw business and technical graphics software package now is also available for the Hewlett-Packard Co. Series 200 desktop computers.

The software originally was introduced for the HP 9845B/C desktop computers, which include the HP 9816, 9826 and 9836. The two Udraw utilities, XY Chart Udraw Utility and Plot Udraw Utility, now are also available for the Series 200. This software has been included by HP in its HP-Plus Software Catalog.

The XY Chart Udraw Utility reportedly facilitates the preparation of XY charts using manual or computer file data entry as a complement to the digitization data entry mode of Udraw. The Plot Udraw Utility provides the same plotting capability that is available in Udraw, plus an additional font for text and compatibility with a greater choice of HP plotters, the vendor said.

Udraw is available for $1,000. The XY Chart Udraw Utility is priced at $500, and the Plot Udraw Utility is available for $250. Sparacino Associates is located at 175 Blackberry Drive, Stamford, Conn. 06903.

Report Writer Serves HP 3000

TAMPA, Fla. — Collier-Jackson, Inc. has introduced an interactive report writer for its payroll and personnel systems running on Hewlett-Packard Co.'s HP 3000 system.

The interactive CJ/Report Writer is compatible with the HP View/3000 screen handler.

It is expected to be available on Collier's general ledger, accounts payable and accounts receivable systems in June. The report writer is said to enable users to custom-tailor reports from all information in the data base.

The report writer searches out, recategorizes, sorts and prints requested information either on-line or on hard copy via a batch process.

The report writer sells for $2,500 for each system with which it runs. More information is available from Collier at 5406 Hoover Blvd., Tampa, Fla. 33614.

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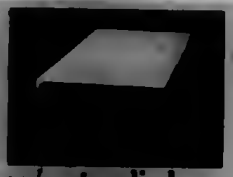

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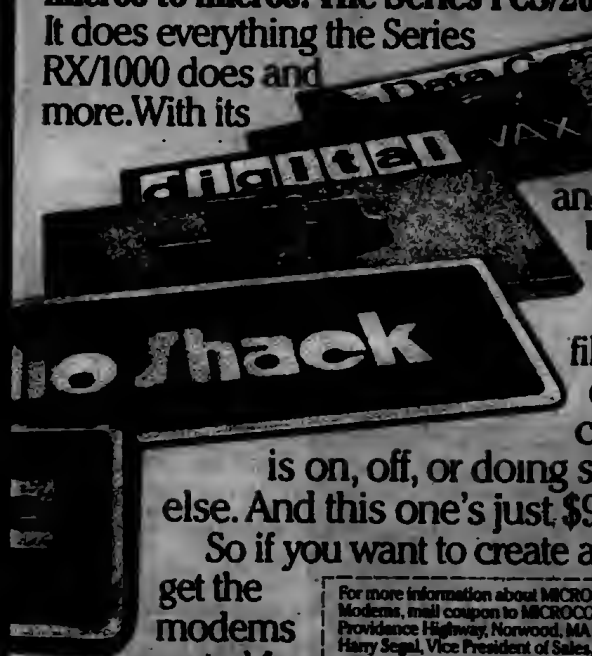

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Upgrade Out For 'DBcopy'

BUFFALO, N.Y. — Bradmark Computer Systems, Inc. has announced new features for its DBcopy data base utility for the Hewlett-Packard Co. HP 3000.

The utility now has the capability to restore a full data base or a root file and specified data sets from a store or sysdump tape to any group and account. The user need not be the creator or have privilege mode capability, a spokesman said.

Other capabilities have been incorporated into the alter feature to allow the transformation of zoned decimal fields and packed decimal fields to fields within the receiving data base. A rename feature has been incorporated to allow renaming of a data base from its original group and account to any other group and account. Improvements have also been made to data base unloading and reloading operations to and from tape, the company claimed.

A one-time license fee is $2,500 from 4446 Main St., Buffalo, N.Y. 14226.

Maintenance Tool Tailored to HP

BELLINGHAM, Wash. — ABC Management Systems, Inc. has announced a version of the ABC maintenance management system for the Hewlett-Packard Co. HP 3000 computer. The package is for manufacturing, processing, utility, industrial plants, gas and oil, public works, schools, hospitals, service and repair sites.

The package includes a data base and eight modules including labor, planning, net capacity, performance control, budgeting, equipment history, maintenance inventory and preventive maintenance. HP's Image data base can optionally be used.

The package requires a minimum of 64K bytes of memory and is priced from $11,000 to $65,000, depending on the modules selected from Suite 3, 805 Dupont St., Bellingham, Wash. 98225

Aid Supports System/34

ATLANTA — Logic International, Inc. has unveiled the Programmer-Operator Productivity Aid for IBM System/34 users.

The software is said to simplify, enhance and combine some of the procedures of the standard IBM System Support Program, a disk resident system to provide operating system capabilities under System/34. Features include a prompt screen with each parameter explained if no parameters are entered, documentation, library procedure and an SFGR procedure that creates screen format load members, prints an image of the format and generates RPG-II I/O specifications.

The Programmer-Operator Productivity Aid is available for a one-time license fee of $200. Logic International can be reached through P.O. Box 14018, Atlanta, Ga. 30324.

Financial Packages Written In VAX Cobol, FMS Debut

WEST BLOOMFIELD, Mich. — Radley Business Computers, Inc. has announced applications software packages written using Digital Equipment Corp. VAX-11 Cobol and VAX-11 Forms Management System (FMS) for DEC VAX systems.

Available in record management systems file structure or VAX-11 data base management system formats, the systems include payroll, accounts payable and general ledger.

The general ledger package can interface with the vendor's Fin-ipulator financial modeling package.

The price of the packages starts at $4,000 each. More information is available from the vendor at Suite B212, 5600 W. Maple, West Bloomfield, Mich. 48033.

'VDS' Handler Targets DEC RT-11, TSX-Plus

SHERMAN OAKS, Calif. — Glenn A. Barber & Associates, Inc. has announced a new utility for Digital Equipment Corp. RT-11 and TSX-Plus systems. The Virtual Device System (VDS) reportedly allows an RT-11 file to be assigned and accessed as a virtual device. Up to eight different device directories are available to each operator at any one time.

The VDS handler has been written to include multiterminal support, self-nesting and TSX-Plus support.

A single CPU license fee for VDS costs $400 from the vendor at Suite 304, 15010 Ventura Blvd., Sherman Oaks, Calif. 91403.

File Utility Geared To Scientists

ROCKVILLE, Md. — CSS, Inc. has introduced a software package called Data File Management (DFM) to provide the tools needed to deal with the copious amounts of data collected and stored by practicing scientists and engineers.

The DFM package currently is available for use on Digital Equipment Corp. systems running RT-11 and RSX-11M. Recognizing that much of the data collected in the lab goes unanalyzed because the job of finding data that already has been collected and stored takes an enormous and inordinate amount of time, the package is intended to provide a "data file technician" to the researcher to relieve him of much of the tedium in the laboratory.

DFM is a menu-driven system that is said to provide data file searching capabilities that allow collections and combinations of data files to be created dynamically for further analysis within a controlled environment. DFM performs an indexing of all user-defined files using logical operators to provide an almost unlimited number of indexed keys available for searching.

The software also provides some cursory data viewing tools. The interactive histogram reportedly allows the distribution of a variable to be displayed, including the basic parametric descriptions of the distribution.

Demonstration packages of DFM are available for $300. The license cost for single CPU use is $1,495 for RT-11 operating systems and $1,995 for RSX-11M operating systems. The demonstration package cost is credited on purchase of the full license, the vendor said from Suite 100, 451 Hungerford Drive, Rockville, Md. 20850.

Analysis Service Out for 'Vmap'

NORTH HOLLYWOOD, Calif. — VM-CMS Consulting Services, Inc. has announced a performance analysis and solution service for users of Vmap, a performance analyzer for the IBM VM/370 operating system.

Vmap author Chuck Tesler will provide analysis of Vmap reports and recommendations for solutions to performance problems.

The service can be performed with overnight carriers.

Prices vary, a spokesman said from 7248 Bellaire Ave., North Hollywood, Calif. 91605.

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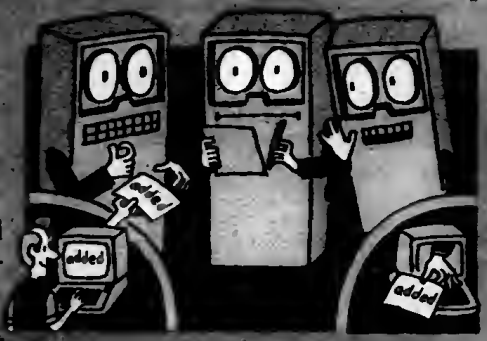

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'Viking Data Manager' Controls Isam Files For VAX-11 Users

TULSA, Okla. — Viking Software Services, Inc. has unveiled a package said to create and manipulate interactively indexed sequential files on a Digital Equipment Corp. VAX-11 computer.

The Viking Data Manager reportedly is designed to create, update, verify and inquire into keyed Isam files from formatted screens (or "forms") on CRT terminals.

No programming is necessary, although optional user exit routines may be developed for complex applications, according to a Viking spokesman.

The Viking Data Manager operates on any VAX-11 with the VMS operating system. Most popular terminals can be used, such as DEC's VT100 family and terminals from Beehive International, Inc., Hewlett-Packard Co. and Lear Siegler, Inc.

An end-user license for a single VAX-11 CPU is $2,500 if the user already has Viking's Forms Manager, otherwise, the license is $8,500. License fee includes full one-year warranty, according to a Viking spokesman.

Viking Software Services is located in Suite 816, 2800 Center Building, 2815 E. Skelly Drive, Tulsa, Okla. 74105.

'VAX Unity' 2.1 Claims Improved Response Time

TORONTO — Human Computing Resources Corp. has announced Release 2.1 of VAX Unity, a product which provides a Bell Laboratories' Unix environment for users of Digital Equipment Corp.'s VAX-11 computers under the VMS operating system.

The system runs at the user level, requiring no special permissions and no changes to VMS. The product provides significant improvements in speed over previous releases, a spokesman said. A one-time license fee for a system supporting 16 simultaneous Unix users costs $9,995, which includes a Unix System III binary license, a user manual, credit toward a four-day Unix course and one year of support.

Human Computing Resources is located at 10 St. Mary, Toronto, Ont., Canada M4Y 1P9.

DEC Announces Pascal Available On Decsystem

MARLBORO, Mass. — Digital Equipment Corp. has announced the availability of the Pascal programming language on its Decsystem-20 computer. Version 1 of Pascal-20 is primarily an instructional version and provides an alternative to Fortran for engineering and scientific use, according to a spokesman for the company.

The Pascal-20 compiler is an extended implementation of the Jensen and Wirth Pascal and meets International Standards Organization standards. It is a one-pass compiler that produces object files and optional source code listings, compilation error information and cross-reference and machine code listings, a spokesman said.

Extensions include double precision Real data type, exponentiation operator, enhanced open and close I/O procedures, Fortran calling sequence for Macro and Fortran callable routines and a value declaration to initialize scalar and structured variables, a vendor spokesman stated.

A single-use license costs $7,000 with availability in December from DEC, which is located in Maynard, Mass. 01754.

Series Supports Fund Raising

HARVARD, Mass. — Service Information Systems, Inc. has introduced a series of fund-raising applications packages for Digital Equipment Corp. VAX-11 Cobol-based systems.

The first two releases include Campaign Supporter System (CSS) and Business Association System (BAS), both designed to support the data base administration functions and the fund-raising requirements of these organizations.

CSS reportedly supports the maintenance of a campaign supporter data base. Extensive supporter data base capabilities allow sorting, selecting and merging of records on a variety of output formats, a vendor spokesman maintained.

BAS is said to support the maintenance of group, association or business organization data bases. Donor fulfillment and contribution processing are included functions, according to a spokesman for the company.

CSS and BAS are available either on a time-sharing basis or as stand-alone packages for licensing fees ranging from $10,000 to $20,000. Service Information Systems is located at 487 Pinnacle Road, Harvard, Mass. 01451.

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MASON, Ohio — Ivan Software, Inc has announced productivity aids for the NCR Corp. VRX operating system.

Ivan-Edit is an interactive full-screen text editor that features page-mode cursor control, an on-line Help command, public and private library support, a scan command for desk-checking of modifications and one-second copy/save times. A record-level audit trail by date and user is also included, a spokesman said.

Ivan-Lib is a menu-driven program and data file librarian that keeps production and test libraries separate. File access, program modifications and deletions may be controlled through Ivan-Lib and the system administrator.

Ivan-Access is a system utility that manipulates the VRX print spool file and can be called from any VRX Cobol or NCR National Electronic Autocoding Technique Virtual System program. It allows authorized users to access, print or sort the VRX spool file to a separate data file for further processing, the spokesman said.

Ivan-Jstat is a VRX Cobol application that accesses VRX job status information. It allows on-line users to monitor the progress of jobs submitted to VRX.

Ivan-Edit and Ivan-Lib are offered as a package for $5,500. Ivan-Access costs $895, and Ivan-Jstat costs $250.

Ivan Software can be reached through P.O. Box 76, Mason, Ohio 45040.

'Portman,' 'Mortserv' Run On NEC Minis

PARAMUS, N.J. — Aya Associates, Inc. has announced mortgage management and automotive port management packages for minicomputers developed by Nippon Electric Co. (NEC).

Portman is a port facility management package designed for users receiving and processing automobile imports. Features include up-to-date vehicle storage inventory, automatic generation of work orders for accessory installation and repairs, vehicle load allocation and dispatch to dealers. Also featured are accounting and storage reports including invoices to vehicle manufacturers. The package costs $25,000, the vendor said.

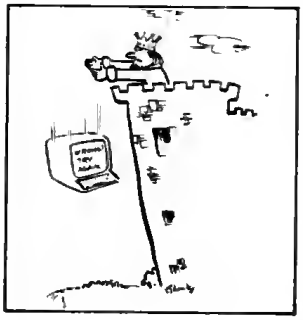
Mortserv handles almost all legal documents, bookkeeping and reporting requirements associated with mortgages. Features include loan processing, printing of mortgages, affidavits, closing documents disclosure statements and other legal documents. The package also prepares on-line accounts status reports and automatically prints payment coupons. Automatic generation of late payment, tax due, insurance due notices and investor reports are also featured. The package costs $4,500, the vendor said from Suite 203-B, 275-277 Forest Ave., Paramus, N.J. 07652.

MCS Enhances 'Anvil-4000'

IRVINE, Calif — Manufacturing and Consulting Services, Inc. (MCS) has announced a hidden-surface, hidden-curve capability for its Anvil-4000 computer-aided design and manufacturing software for 32-bit computers from IBM, Digital Equipment Corp., Perkin-Elmer Corp., Prime Computer, Inc. and Data General Corp. and 48-bit processors from Harris Corp.

The package now allows users to enhance displayed views of objects by removing lines, curves and surfaces without eliminating the associated geometry of text annotations.

Anvil-4000's price ranges from $35,000 to $120,000 from MCS at 17942 Cowan, Irvine, Calif. 92714.



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System 1032 provides a common-sense relational approach to data management, without the burden of relational calculus or SQL. Users easily grasp both simple and complex data relationships, and assistance is right at their fingertips. Special function keys make it easy to complete commands, quickly learn new ones, and see explanations of options and parameters, even in mid-command. So there's no need to struggle with a manual in the lap or consult an already-hassled wizard.

Best of all, System 1032 is fast and pretty. It answers complex queries almost instantly and produces presentation-quality reports with single commands.

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Don't think it's a toy, though. Sophisticated applications designers can program in any VAX language, including System 1032's built-in block-structured language, and still access all of System 1032's powerful data management tools. A complete range of data types, format definitions, shared data structures, and other advanced features ensure that System 1032 easily satisfies the most demanding needs.

If you're a manager, you'll especially appreciate System 1032. Your users and programmers all use the same unified command language and data base concepts, so communication between them is easier than ever. And System 1032's careful human engineering drastically cuts your training costs and increases productivity.

Plus we exploit the best of the VAX architecture with shareable native code, asynchronous I/O, and proprietary inverted files—efficiently! So, unlike other software, System 1032 won't force you to buy more memory, disk space, or CPUs.

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Software House has an impeccable decade-long reputation for reliable software and responsive technical support. System 1032 is the offspring of System 1022,™ the most widely used DBMS for DEC mainframes. Its step-oriented commands and relational design have proved themselves in years of use at hundreds of sites. And System 1032 has undergone extensive field-testing to ensure that it works right the first time for you. Although new, System 1032 is already the most mature DBMS available for your VAX.

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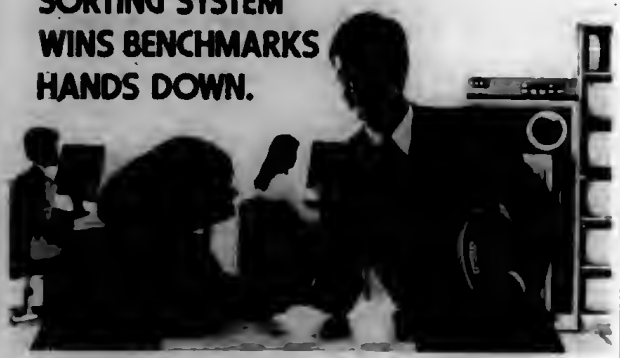

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Data Decisions Directory Covers Financial Packages

CHERRY HILL, N.J. — A directory of 317 general accounting and financial software packages from 86 vendors has been released by Data Decisions, Inc.

The survey reportedly covers products offered for mainframes, minicomputers and microcomputers that are running Digital Research, inc. CP/M and MP/M and Bell Laboratories Unix operating systems. The directory is designed for corporate users looking for either standalone packages or components that can be integrated into total financial accounting systems.

The report is divided into seven subsections. Five sections cover fundamental cross-industry accounting procedures such as accounts payable, accounts receivable, general ledger, fixed assets accounting and payroll/personnel packages. These are followed by subsections on the most popular fully integrated financial accounting systems and on packages that handle more specific applications such as order entry and invoicing, time accounting, inventory control and billing.

Entries for each product include intended audience, host computers and operating systems they support, required systems software and memory, the year the package was first installed, the current number of users and their geographic distribution. Special package functions are highlighted along with license prices, which include all maintenance and support provisions.

The entire general accounting and financial software directory (Report 8-CJ) is available for $49 from Data Decisions, 20 Brace Road, Cherry Hill, N.J. 08034.

Publication Reviewing Micros Offered on Index, Rolodex Cards

AUSTIN, Texas — *Educational Micro Review*, a magazine that each month reviews and categorizes 400 articles of interest to people following the microcomputer industry, is now being offered on 3-in. by 5-in. index and Rolodex cards.

The card formats are designed for libraries, authors and individuals who want a quick way to access articles on specific topics or who want to accumulate a data base of software and hardware reviews. Each card contains a separate review with complete bibliographic data, product name, International Standard Program Number (ISPN) code from Elsevier Science Publishing Co. and categorization codes.

Software and hardware reviews are cross-referenced using an ISPN coding scheme that assigns a unique number to every software package. According to Educational Micro Review, Inc., a subscriber to the *Review* can accumulate and cross-reference articles by ISPN numbers and use "The Software Catalog" from Elsevier for full data on the program.

Hard-copy issues of the *Educational Micro Review* are available for $36 for a one-year subscription. A one-year subscription of the index and Rolodex versions is available for $120 for a full deck and $55 each for book reviews, software reviews or hardware reviews. Further information can be obtained from Educational Micro Review, P.O. Box 14393, Austin, Texas 78761.

Kernel Written in C Unwrapped

SUNNYVALE, Calif. — A real-time, interrupt-driven operating system kernel written in C and transportable across a variety of 8-, 16- and 32-bit microprocessors has been announced by The Destek Group.

Called Operating System/Real Time (OS/RT), the kernel is furnished in C source code with unlimited binary rights. The operating system supports all functions for process management, dynamic control of interrupts, memory allocation and processor-to-processor communications, a spokesman said.

OS/RT can be incorporated into disk-based systems or embedded in read-only memory. It requires from 5K bytes to 12K bytes of memory, depending on the compiler and features used. The operating system provides 256 priority levels and 2^{32} events, interrupts, tasks and processor-to-processor communications channels, the spokesman said. It is fully transportable across any processor with a C compiler.

OS/RT costs $8,000 from 830C Eveiyn Ave., Sunnyvale, Calif. 94068.

Tool Targets Furniture Makers

HICKORY, N.C. — Unifour Systems Software Development, Inc. has announced a software package for manufacturers of upholstered furniture. Called System of Furniture Accounting (Sofa), the product runs on the IBM System/23 Datamaster with a minimum of 15M bytes of disk storage.

Major features include:

- Comprehensive order entry and tracking, machine printing of acknowledgments and invoices and automatic piecework ticket printing.
- Separate array of fabric inventory tracking and reporting options, including multiweek projections for fabric and frame requirements.
- Multiple reports for major file records.
- Sales analysis, including separate fabric and frame reports in various formats, and a detailed commission report.
- Accounts receivable, with aging, statements printing and multiple reports.

The package costs $5,000 from 150 First Plaza Building, Tate Blvd., Hickory, N.C. 28601.

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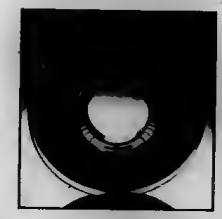

Talk to the Media Management Specialist at Graham Magnetics The tape company.

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Micro Notes

Okidata Corp. has introduced a software package for Apple Computer, Inc.'s Apple II+ and Apple IIe computers to use with the Okidata Microline 92, 93 and 84 Step 2 printers.

The package reportedly allows users to form new characters by creating dot matrix patterns. When the **Personal Touch** diskette is inserted into the computer, a graphic representation guides the user through dot placement using keyboard commands, while another display shows how formatted characters will look when printed. The new characters can reportedly be stored on the diskette and downline loaded into the Okidata memory for printing.

The Personal Touch sells for $89 from Okidata at 111 Gaither Drive, Mount Laurel, N.J. 08054.

Management and Computer Services, Inc. has enhanced its **Estimacs** development project estimating system to enable software managers to generate estimates for system maintenance projects. The system is said to generate estimates of time, staffing and related cost, hardware and cumulative resource needs and risks for system development projects.

Used on either Apple Computer, Inc. computers or the IBM Personal Computer, the maintenance model is said to construct estimates from user answers to 25 questions. The maintenance software then provides an estimate range to which users may add their judgment.

The package costs $25,000 per CPU, according to the vendor at Great Valley Corporate Center, Valley Forge, Pa. 19482.

Corvus Systems, Inc. has announced **Corvus Graph** and **Corvus Paint**, two graphics software packages developed for the Corvus Concept personal workstation by DDD Software.

Graph creates fully rotatable, three-dimensional graphs of numerical information. Other features include compatibility with Corvus Logicalc and Edword, allowing four data dimensions to be correlated simultaneously; a library of type fonts and graph types; 720- by 560-pixel resolution, and printing to resolutions of 2,000 by 3,000 points. Paint offers drawing, digitizing and program composition on black-and-white graphics for the microcomputer.

Corvus Graph is priced at $395; Corvus Paint costs $695, including a mouse. Both packages will be available in August. Corvus Systems is located at 2029 O'Toole Ave., San Jose, Calif. 95131.

Microsoft, Inc. has announced **MS-DOS 2.0**, an enhanced version of its microcomputer operating system. The new version is source-code-compatible with both MS-DOS and the company's Xenix. Other enhancements include new hierarchical file management; a "software bus" that allows software-controlled peripherals to be plugged into expansion slots; I/O redirection, allowing the user to move data from one device to another automatically; and special language facilities that allow character formats and error messages to be adapted into non-English languages. The new version is available through OEMs, which set user prices. Microsoft is located at 10700 Northup Way, Bellevue, Wash. 98004.

Digital Research, Inc. and Hitachi Ltd. have announced the availability of Digital Research's **CP/M-68K** operating system for Hitachi's Motorola, Inc. 68000-based microprocessor, called the HD68000. CP/M-68K is the first in a family of Digital Research operating systems to be written in C and is designed to provide a bridge for transporting applications written in C between Unix and CP/M operating systems. The price for CP/M-68K is $350 from Digital Research, P.O. Box 579, 160 Central Ave., Pacific Grove, Calif. 93950.

Advent Products, Inc. has announced a Digital Research, Inc. **CP/M format conversion service** that converts diskettes for use on the most popular CP/M-based machines. Conversions cost $25 per diskette on orders of less than 10 and $20 per diskette on orders of 10 or more. Additional copies of converted diskettes are $5 each from 965 N. Main St., Orange, Calif. 92667.

Readiware Systems, Inc. has released **Readiterm**, a microprocessor communications package that offers access to mainframe data and information services. Readiterm runs on the IBM Personal Computer using PC-DOS, at least 64K bytes of memory and one 160K-byte disk drive. It costs $50 until August 31, at which time the price increases to $75 from the firm reachable through P.O. Box 680, W. Redding, Conn. 06896.

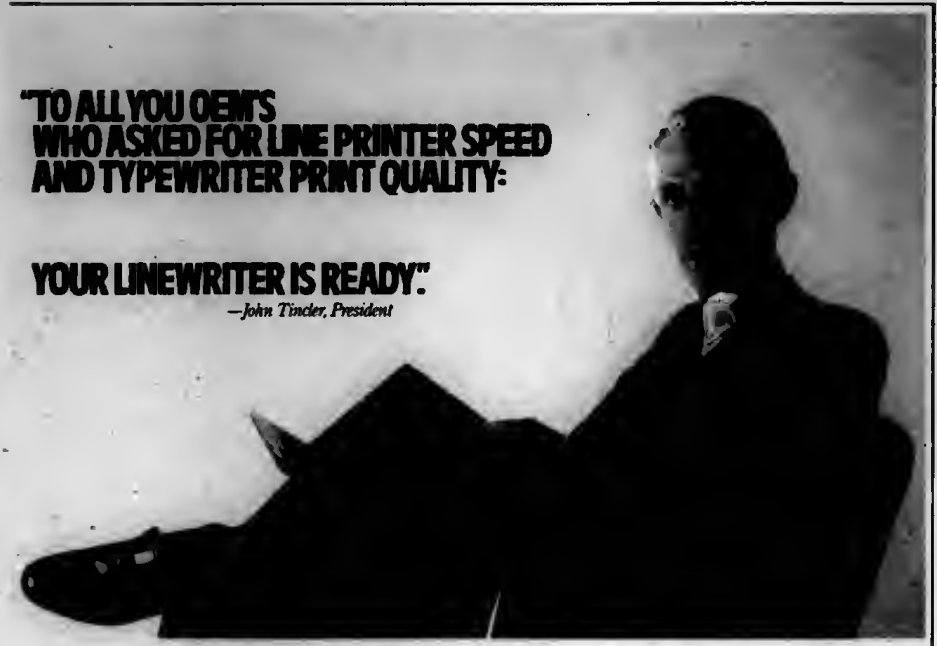
Aton International, Inc. has announced support of Microsoft, Inc.'s Xenix multiuser operating system on hard disk versions of Radio Shack's TRS-80 Model II, 12 and 16 microcomputers, in addition to its Digital Research, Inc. CP/M support. Aton CP/M 2.2 costs $279; the cost of the hard disk upgrade for current Aton CP/M owners has been cut to $100 from $125. Aton is located at 260 Brooklyn Ave., San Jose, Calif. 95128.

Alpha Software Corp. has introduced **The Executive Package**, a collection of 41 Basic spreadsheet programs and 17 Visicorp Visicalc tables for the IBM Personal Computer. Based on John M. Nevison's book *Executive Computing*, the package costs $145 in retail stores nationwide. The software runs under the Microsoft, Inc. MS-DOS operating system. Alpha Software is located at 12 New England Executive Park, Burlington, Mass. 01803.

NEC Information Systems, Inc. has announced that Organic Software, Inc.'s **Milestone** project management and time scheduling package is available for NEC's Advanced Personal Computer. Milestone runs under the Digital Research, Inc. CP/M-86 operating system and costs $295 from the firm at 5 Militia Drive, Lexington, Mass. 02173.

A screen writer said to create and save up to 32,000 screen formats via on-line commands, for IBM and compatible Personal Computers, has been announced by Micro Architect, Inc. Included are a transaction processor, file reorganizer and an advanced query program. The software requires 64K bytes of memory, monochrome display, dual disk drive and IBM PC-DOS. The program costs $98, or $298 with the IDM-X data base manager, from the vendor at 96 Dothan St., Ar-

(Continued on Page 98)



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Micro Notes

(Continued from Page 96)

lington, Mass. 02174.

Also from Micro Architect, Inc. is a Mailing List System (MLS) file converter for Radio Shack TRS-80 Models II, 12 and 16. The software converts MLS to Micro Architect's **Mail-X** file, which can reportedly handle up to 32,767 records in a single file. Mail-X costs $299 under TRS DOS, Digital Research, Inc.'s CP/M-80 and Microsoft, Inc.'s MS-DOS operating systems. The vendor is located at 96 Dothan St., Arlington, Mass. 02174.

A **Cross Reference** (CRF) utility programming aid for the IBM Personal Computer has been developed by Sumar Corp. of Austin, Texas. CRF is said to provide the user with a complete reference listing of variables within a Basic program. The software requires 64K bytes of random-access memory, 80-char. screen, 160K-byte disk drive and IBM's PC DOS. CRF costs $29.95 in bookstores or from the General Book Marketing Division, Prentice-Hall, Inc., Sylvan Ave., Englewood Cliffs, N.J. 07632.

Goldata Computer Services, Inc. has introduced a do-it-yourself data base system for Apple Computer, Inc. Apple II and Apple II+ personal computers. **Goldatabase** is said to allow users of all levels to format a data input screen themselves. The software runs under Apple DOS and costs $395 from the vendor at 2 Bryn Mawr Ave., Bryn Mawr, Pa. 19010.

A decision support system (DSS) for Intel Corp. 8088- and 8086-based personal computers has been developed by MDCR, Inc. Originally designed for IBM mainframes, **Impact DSS** requires Digital Research, Inc. CP/M or MP/M 16-bit operating systems and costs $2,500 for micros. For IBM mainframes, the software calls for VM/CMS, MVS/TSO or OS/VS operating systems and costs $20,000 from the vendor at 760 Highway 18, East Brunswick, N.J. 08816.

Execucom Systems Corp. has announced **Interactive Financial Planning System (IFPS)/Personal**, a distributed decision support software package designed to unite IBM Personal Computers with Execucom's mainframe-level IFPS. The software costs $20,000 for a minimum order of 10 copies and runs under IBM PC-DOS, a spokesman said from 3410 Far W. Blvd., Austin, Texas 78731.

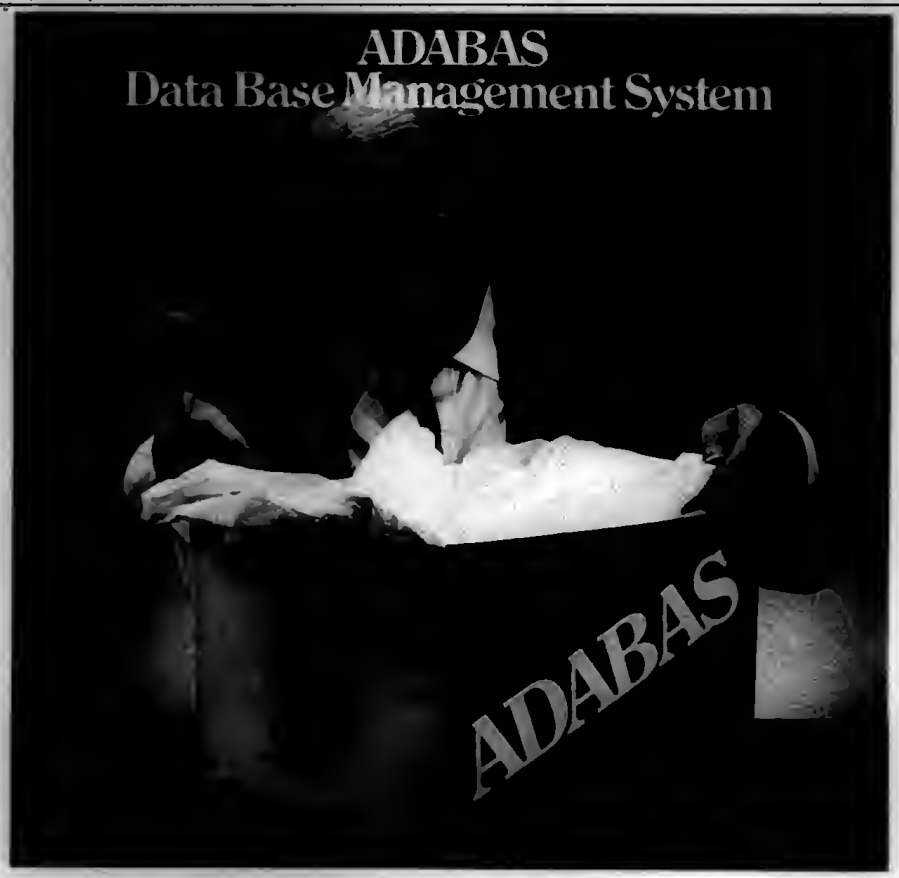
SLR Systems has announced a Zilog, Inc. Z80 disassembler for Digital Research, Inc. CP/M-based and Radio Shack TRS-80 systems. **Z80DIS** is said to take a binary file and an optional specification file and create a listing file or syntax-error-free source file. The disassembler costs $69.95 from 200 Homewood Drive, Butler, Pa. 16001.

Continental Software has announced **Megafile**, a data base management software package for the IBM Personal Computer and XT microcomputers. Megafile combines filing, graphics and reports features in a single package. The package costs $195, the vendor said from 11223 S. Hindry Ave., Los Angeles, Calif. 90045.

Lifetree Software, Inc. has announced an international edition of its **Volkswriter** word processing package for the IBM Personal Computer. The package is capable of interchangeably writing in English, French, German, Spanish and Italian. The package costs $225, the vendor said from Suite 315, 411 Pacific St., Monterey, Calif. 93940.

New Generation Systems, Inc. has announced a smaller version of its **Microshell** utility program for users of Digital Research, Inc.'s CP/M operating system. Microshell reportedly gives CP/M users features available in the Unix operating system. The package costs $150, the vendor said from 1253 Golf Course Drive, Reston, Va. 22091.

Microsoft, Inc. has announced the **Multi-Tool Budget** expert system for budget planning and control and the **Multi-Tool Financial Statement** expert system for performing financial statement ratio analysis. The packages operate on a variety of microcomputers including those manufactured by IBM, Texas Instruments, Inc., Wang Laboratories, Inc. and Apple Computer, Inc. The Budget expert system costs $150, and the Financial Statement expert system costs $100. The vendor is located at 10700 Northup Way, Bellevue, Wash. 98004.



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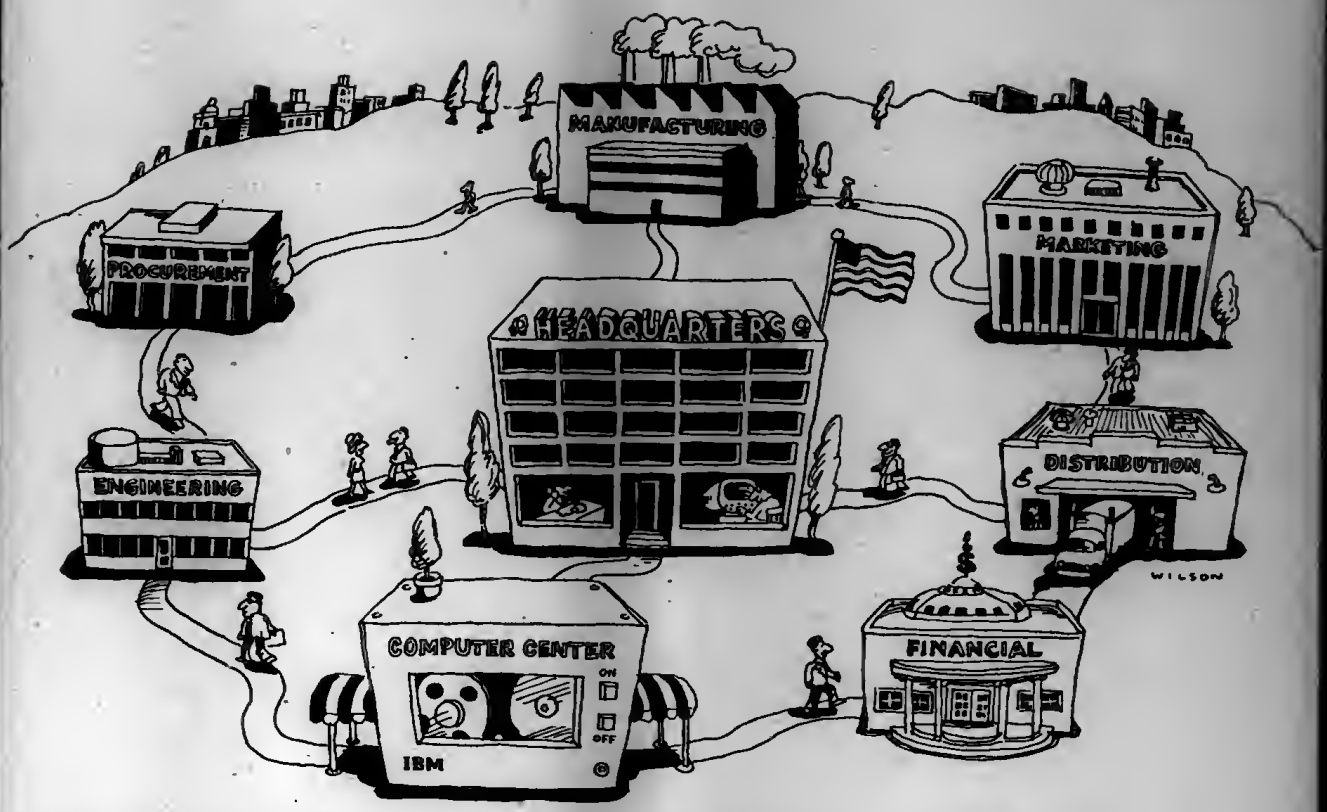

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IN DEPTH

An Interview

THOMAS JOHN WATSON JR., first son of Thomas and Jeannette Watson, was born in Dayton, Ohio, on Jan. 8, 1914, just three months before his father was fired at the National Cash Register Co. Both events proved to be blessings, for Watson the elder went to work for the Computing-Tabulating-Recording Co. as general manager. He was appointed president and chief executive officer in 1915 and in 1924 changed C-T-R's name to International Business Machines. To his great pleasure, his son succeeded him in both name and position.

Watson Sr. always hoped his son would wish to follow in his footsteps. At age five, young Tom was taken on a tour of one of his father's factories. He attended private schools in Short Hills, N.J., went to Hun Preparatory School in Princeton and graduated from Brown University in 1937. Then he went to his father and asked, "How do you go about getting a job at IBM?"

Tom began his apprenticeship as a junior salesman in Manhattan and did well. He took up yachting and flying and became one of New York's most eligible bachelors. In 1940, Tom was called into the service as a private in the Army Air Corps. After training, he was commissioned as second lieutenant and assigned to duty piloting a transport aircraft. He married Olive Field Cawley in 1941, and his first child, Thomas 3d, was born in 1944.

In 1946, Watson Jr. returned to IBM. In 1952, he was appointed president and his father became chairman of the board. Watson Sr. died June 19, 1956, shortly after naming his son chairman.

Watson Jr. showed great interest in electronics, probably as a result of his exposure to various military gadgets and devices. Watson Sr. held little faith that computers could be commercially viable; it was only through his son's insistence that IBM attempted to penetrate this emerging market. The younger Watson's belief was partially guided by what he saw but also by his feeling that, given the opportunity, he could create a market for computers in business. The numbers validate his market assessment: IBM's gross revenue in 1946 was $119 million and had grown only to $215 million by 1950; in 1956, revenue jumped to $734 million and one year later passed the $1 billion mark.

In June 1971, Thomas J. Watson Jr. announced he was stepping down as chairman and CEO of IBM. Having suffered a heart attack the year before, he knew the pressures of his office would not allow him to serve until 1974, when he would reach the mandatory retirement age of 60.

In 1979, President Jimmy Carter appointed Watson ambassador to the Soviet Union, a position he held until 1981. Forbes hailed him as a "first-rate noncareer ambassador." Today, Watson devotes much of his time to Soviet-American relations and the problems of nuclear arms.

As senior editor, special projects at Computerworld, I interviewed Watson at IBM's Management Development Center in Armonk, N.Y., earlier this year. He had just returned from a weekend skiing trip in Vermont. In the following interview, he compares his management style with his father's and describes what it was like to manage IBM during a critical period in the company's history. He discusses technological innovation as well as the competitive international environment and shares his views of the future.

— Jack B. Rochester

IN DEPTH

Mr. Watson, did you ever hear a comment in the early 1950s that the world's computer needs could be satisfied by 11 machines?

I certainly heard a remark that the total needs of the world would be supplied by relatively few. I don't remember the number, but it was certainly less than 100. I don't know who made that remark, whether it was made in IBM or not; I don't believe it was me.

But I think the person making that remark was looking at machines like the Atomic Energy Machine or the machines of aircraft companies. I don't think anybody had the sense to know that you would one day be sitting at a cash register using a computer. I think if you asked that same guy how many of the large machines, call them what you like, would be converted to electronics you would have gotten a different answer. The question concerns what a computer was to us in those days; it was something that performed quite a number of functions.

What changes have you seen in the industry?

Isn't it amazing that the industry is so dynamic; it's even more dynamic than I ever predicted. If anybody had asked me in the mid-'50s, "Will it look pretty good in the mid-'80s?" I'd say, "Well, I don't know." I'd always thought that it would become a highly competitive sort of business. I had watched television go up and over the top and we used to say, "Well, it's going to be many decades before computers get that way."

It seems that computer technology has advanced about three times faster than any other industry.

I think so, that the innovative changes from tubes to transistors to chips seem more rapid than any other industry's innovation. When we used to talk about it, Al Williams and my associates, other old-timers, we never thought there would be this many people in the business so quickly.

You took over at IBM in 1952?

Well, I really didn't take over in 1952; it was an osmosis sort of thing. I returned (from World War II) in 1946 and I sat for a year at the edge of Charles Kirk's desk — he was really the general manager of the place, executive vice-president. I'd managed some military operations, but I really didn't know anything about managing business. My father was rather formidable — he was 72 then — and people didn't want to come to him too much, so they came to me, another Watson who was sitting as the assistant to the executive vice-president. I made a few decisions, made a few visits and answered their questions. Pretty exciting to me.

Kirk and I began to have conflicts, but in the spring of '47 he died and my responsibilities for the general management of this business were constantly increasing. So at some point I was essentially running the thing, maybe five years before my father's death; running it with another guy named Louis (Red) LaMotte, who was much older than I but had a wise vision about IBM, and a fellow called Al Williams, who later became president of the place.

Dad made me the chief executive officer a month before he died, and I'm sure he knew he was dying or he wouldn't have done it. He was willing to let me really run it although he disagreed with many of the things I had done. We'd have arguments, but normally at the end of the road we'd be able to settle things.

Was your management style much different from your father's?

Well first, he was a towering industrial figure to me. Mind you, he'd been born in a very poor farmhouse and had learned everything himself, had never gone to college. He had general manners as good as anybody you'd ever find, general conversation, general knowledge of the history of the United States, general knowledge of international affairs — a very, very exciting kind of personality. But when it came down to actually managing the business itself, oh, maybe I managed it a little bit more scientifically than he, I don't know.

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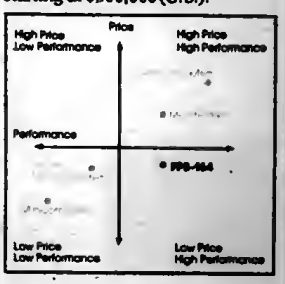

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$$\begin{bmatrix} c_1 & d_1 & 0 & e_1 & & & & \\ b_2 & c_2 & d_2 & 0 & e_2 & & & 0 \\ 0 & b_3 & \cdot & \cdot & \cdot & \cdot & & \\ a_4 & 0 & \cdot & \cdot & \cdot & \cdot & \cdot & \\ & a_5 & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \\ & & \cdot & \cdot & \cdot & \cdot & \cdot & \cdot \; e_{n-3} \\ & & & \cdot & \cdot & \cdot & \cdot & \cdot \; 0 \\ 0 & & & & \cdot & \cdot & \cdot & \cdot \; d_{n-1} \\ & & & & & a_n & 0 & b_n \; c_n \end{bmatrix}$$

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THOMAS J. WATSON JR.

IN DEPTH

Maybe there was a little more consistency to my management.

He tended to make very quick decisions on promoting people. I think I made those decisions a little more slowly, but I also think that although any manager creates a certain amount of awe in the people who work for him, the top guys around here were never very awed of me. Some of the people wouldn't say much and I didn't lean heavily on them, but some would say, "Oh Tom, for gosh sakes, you're full of baloney, that'll never work." Very helpful. Usually I didn't try it if they said that.

The years 1946 to 1956 were turbulent for me. I don't think that anyone personally would want to live through a decade like that twice. But it was an interesting decade, and we ended up with a great father-son relationship, and I always hoped he would feel that I was a worthy son. I have the satisfaction now, over 25 years later, of assuming he's sitting up there looking down and probably figures things are going OK.

Things didn't go very well for your father at National Cash Register, did they?

He was extremely successful at NCR. He left NCR because of internal corporate politics. The company was wholly owned by [John] Patterson. Dad had got the sales up three times in four years, and someone told Patterson that people were relating more to Dad than to Patterson. They had a difficult time, Dad had been married a year and I had just been born and [NCR] let him go. They weren't bad to him, but they weren't particularly good to him.

I think he learned an awful lot at NCR, and he never poor-mouthed Patterson. He used to tell me, "Well, I learned that in the cash register company . . . I learned this in the cash register company." It seemed to me that half what he said he learned was in the cash register company. The careful following of salesmen's records and sales, the 100% Club, walking around the factory, being close to factory people — all those things Patterson did.

I think Dad did it more because he had been so dirt poor that when he walked along the line and talked to the foreman, he could talk with a feeling for the level that foreman was living, because he had lived that way before. To come that far you either get awfully arrogant and say, "Those dunces, they're still poor; they should have been like me," or you say, "Well, I had a few breaks, and maybe if they'd had the same breaks they'd be where I am." Dad always took the latter attitude.

I'll tell you a little story. IBM has been accused of being a monopoly; I've always said we tried to monopolize only one thing. My old man decided that when people went off to war (World War II), he would pay them a portion of their salary until they got back. We had enough margin so we could do that. Everybody that left this company got a quarter or an eighth of his annual salary — I forget the figure — in 12 monthly increments. And you got it in a check which you cashed at the PX, so every month you thought of IBM.

This caused a very high percentage of people to come back, and that was a monopoly. It was on the knowledge and know-how of those people that we were able to build computers and install computers and think computers through to make sure they could apply to business.

What do you think of management in America?

I think it's our greatest resource. In a way, I'm an egalitarian and a liberal democrat who believes that you want more and more people to live better and better. Nevertheless, I think there is a drive in many of us either for personal gain in the way of money, personal pride, position or just for personal satisfaction. The total spectrum of the various drives is only available in a democracy and more available in this democracy because it's so wide. It's a tremendous economic system.

Are good decision makers made or born?

That's an interesting question. I

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think they can be entirely made. First off, of course, you have to have good raw material. Even then, however, for every person who's capable, who achieves success as a decision maker, there are probably a large number who haven't had the right combination of circumstances or aren't motivated to capitalize on what they have. You may find half a dozen people within 300 feet of us who have all those abilities, but have yet to be given a chance to use them.

For instance, I was thrown into this thing where my pride made me not want to fail. The actual process of management was fun for me. And it appeared simple enough . . . make a few mistakes, learn how to correct them. But then you must ask yourself why you make the same mistake over and over again. Suddenly you think, "Well, we've made a mistake. We'd better write that mistake up and send it to every manager in the company. Policy letters, numbered, put them on every manager's desk, but don't send too many." So we started something called management briefings for less important business errors.

How did you find the good people to become IBM's managers, decision makers?

Some of the people I would see were obviously going to be great. More often we would look to the district managers, making many business calls to offices and trying to pick people. Dad used to do this unscientifically, and he didn't visit an office long enough to have great success with it. I tried to do it more scientifically, even though I wasn't a very scientific manager. What I created was the leaders list, having each branch manager keep his three or four top fellows listed and turn their names in to the district manager. I had the district manager call them, and I'd eat lunch with those guys and come up with the 10 best district guys. We established regions, which had districts, and I'd have the list of men distilled even more.

There were a few people I brought in here because I met them in the field. More than half didn't make it, so my judgment was not flawless. But some of those who did make it did awfully well.

What qualities and attributes were you looking for?

Oh, I was looking for a compatible personality who seemed not to feel inferior to me, to be able to talk to me on the same level, a fellow who would give brutally frank answers when you asked, "How is it going?" Those were things that very much impressed me. I would never bring anybody in here whose name I'd brought back from a trip until I'd checked his record. But more often, probably three-quarters of the time, they came up from the leaders list and I'd have a half dozen through here to find one that I thought I could work with.

Fortune *magazine termed you "the most successful capitalist who ever lived," because IBM shares were worth $36 billion more when you stepped down in 1972 than when you took over in 1956. Was it difficult to continue managing and making decisions for the corporation*

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THOMAS J. WATSON JR.

IN DEPTH

Photo by Jack Rochester

'I encouraged competitive attitudes and established competitive situations down through the business so that the laboratories would be competing, factories would be competing, people selling one kind of product would be competing with people selling the other. I thought there was a lot of discipline that came from that.'

— Thomas J. Watson Jr.

through all that period of tremendous growth?

Yes, it was very difficult. You see, by 1958 or 1959, we realized that we had water in relatively large quantities, so to speak, and the market was a dry sponge. If we could just learn to introduce that water into that sponge in acceptable form, there was no limit to where this business could go.

So we reorganized from time to time and always tried to stay dynamic and to cope with the great opportunities we had for growth as well as new problems. Still, we never expected to grow as fast as we did. Of course, the business had been growing during the 1914-1956 era, but I think after that we got it way up because of all the accounting that had to be done in the world.

I vividly remember when I got my target up to $1 billion. We had a very tiny air fleet around here in 1957, and somebody said we ought to have a Convair. We could run it full time just between Endicott and Poughkeepsie. And I said, "Well, that would be great. I love flying airplanes and I'd like to learn to fly the Convair, but we'll do that when we're a billion dollars." I think we

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went through the billion-dollar point at the end of that year.

I never thought I was a very scientific manager, so I encouraged competitive attitudes and established competitive situations down through the business so that the laboratories would be competing, factories would be competing, people selling one kind of product would be competing with people selling the other.

I thought there was a lot of discipline that came from that.

That was how you dampened the spooge?

I tried to, yes. Yes, we got it wet; the Department of Justice said we got it dripping.

You mentioned competition in the labs. How did research and development work at IBM?

You know, one thing you ought to remember in thinking about R&D at IBM and all the college graduates we have today is that when I came back from the war, I doubt if in lead positions in R&D we had more than a dozen people with college degrees. We had a fellow here named Fred Carroll, and he developed the Carroll Card Press. We started being able to roll out 300 cards a minute, and I think he got it up to 2,500 cards a minute by the time we finished. To whatever extent we sell punched cards today, we're still using a Carroll press.

I think IBM quickly realized from the minute the Census put in the first Univac, our drive was totally commercial. I don't know whether Univac's drive was commercial, but in any case they got two machines in there. Now I always managed through being terribly afraid of failure, and I had been in Washington, had a long talk with our vice-president there. I was at the airport and called him back for something and he said, "And by the way, I forgot to tell you that Remington Rand has two Univacs in the Census Bureau." I was absolutely panicked. We had some machines under development, and we had built the 701, but we had nothing, really nothing commercial.

It was obvious to me when I saw Eniac and Univac that we had to develop our formal engineering graduate people. We had one man from MIT, Wally McDowell, and he was in charge of R&D. We made him a vice-president and asked him to just get enough people on board with degrees so we could manage the place. We just get enough people on board with degrees so we could manage the place. We just threw out a great casting net, like a Japanese fisherman fishing for minnows, and we got some bad minnows, and we had a bad time The impetus came from Al Williams looking at our balance sheet and finding we spent less than 4% for R&D. He came to me and said, "Look, most companies that are moving rapidly are spending 2% to 3% more."

Well, I think the balance sheet will support the fact that we were up to 9% or 10% a number of years later just

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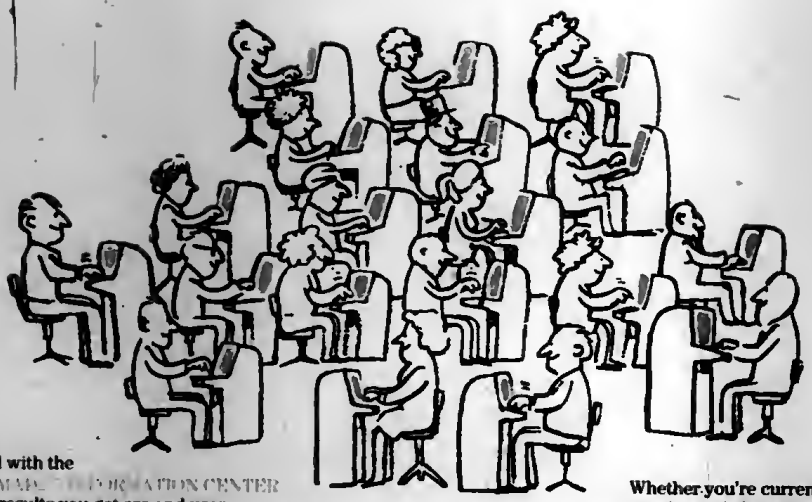

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IN DEPTH

because of that. We built laboratories in attractive places — the West Coast, Yorktown (New York), Zurich and near Cannes overlooking the Riviera — simply to get people to come and work for IBM. Belief in R&D is probably 35% of why we became successful.

Do you believe in the technological imperative, which says that innovation drives industry, or do you think it's the other way around?

Boy, that's a tough one. I guess I would say that industry drove technology, although it depends on where you start. If you start with the invention of the transistor, Shockley, Bardeen and Brattain at Bell Labs, one would have to say that invention drove the computer industry because it enabled us to do so much more. You have a computer sitting in a room and it's generating an awful lot of heat. Every time you sell a computer application, $75,000 a month, the fellow has to pay several million dollars for air-conditioning the room. It's like going to the optometrist; the glasses are $40 without the frames. That's what air conditioning was to IBM: We had been striving for something cooler than the tube, but Shockley came up with the transistor and revolutionized everything.

On the other hand, how did we learn to drive tape? That was a technological advance. We really had to use the tape; industry drove technology in that case, so maybe the answer is an equivocal one: sometimes one and sometimes the other.

How did industry advance tape technology?

We knew that memory was tremendously important right from the word go, and if you went back to the mid-1950s, you'd find a very substantial proportion of our R&D going into that memory business.

One day the vice-president of Metropolitan Life came to see me and said, "Tom, I just want you to know I've known your father a long time, but we're not going to continue to use IBM machines. It may be a year, it may be a decade, but we figure that with the amount of policyholders we're going to have, we'll have a factory building full of punched cards, and we're just not going to do it that way. We hear these things can be magnetically impregnated on tape."

Then Roy Larson of *Time* came to me and said, "You have our whole subscription file on your cards, three cards for every subscriber, and just to push those through your tabulating machine is too much."

And within the house we had a very creative guy who has to be one of the three or four fellows from IBM who put us in this game, name of Birkenstock. He kept coming in my office saying, "You're going to lose this whole ball game unless you develop tape processing," until I wanted to throw him out. An engineer called Weidenhammer, by using several vacuum cleaners to make his mock-up, was able to make s

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long loop in the tape that allowed it to stop instantly because it was so light and had no inertia behind it, but then to start rapidly because all they were pulling against was this vacuum column. We put a lot of records per inch on a piece of tape feeding at about 100 inches per second. That was quite a breakthrough.

We really worked night and day, seven days a week, to get computers into commercial accounts. Initially, computers were forced into the marketplace by CEOs who really didn't understand in detail what they did, but understood their potential far better than that of the tabulating or accounting machines formerly installed in their businesses. The word was, "You know we ought to have computers like that; it's the modern thing. You damn well ought to talk with IBM, talk with Remington Rand and get a computer. That's what we need."

We saw commercial application right away; we realized we could do a hundred transactions a minute, and when we began to tape process we were going to do several thousand a minute. Anybody who has those tools understands that'a got to be the wave of the future.

Those were very difficult years for me, because I saw defeat staring the IBM company in the face. Remington Rand had four or five machines in commercial accounts before we even had one. And after four years we had, I guess, a hundred or more, and they still had a dozen or two. We had a wonderful team; you can't imagine what they did. We patched our way across that bridge with night work and research and development of the type you'd never believe, going almost from the drawing board right into production. Vin Learson was a great doer, and he was in charge of getting some of these computers into customers' offices.

Many feel IBM lags behind technologically in the products it introduces.

I think if you look in our laboratories, you'll find that we are leading in the technologies. We probably are not leading at the rate in which we put stuff on the market, but when we put the new stuff on the market, it goes out in such quantities that we want to make awful sure it works right and is the right thing over time for the customer.

There are a lot of people who put great technological breakthroughs on the market. They sell a few hundred, then nobody wants any more.

So I think the policy is not being out there with the newest product right off the bat. While you'd like to do that because it's exciting from a business point of view, it may be more prudent to be cautious, particularly if your first production run is going to be a thousand or more.

I believe we've made fewer mistakes in the marketplace as a result.

That requires great cohesion between the people in the labs and those who are managing the company, making business decisions. How did that work at IBM?

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I never really understood. The initial input normally came from the sales field, which said, "We need a machine to do the following." And then we'd make that machine. We did have very creative inventors here who were hired to work for us building a specific machine, and they built that machine and it sold like hotcakes.

A very simple example was a fellow my father hired, a high-school teacher named Rey Johnson. He came in with an automatic way to mark examination papers so that he could give a person a multiple-choice exam and you'd "x" in the four block or fill in the eight block. Then you'd put it in a sensor, brushes would read the results and tell you the guy's mark. That fellow was so creative; he and his associates thought up the first disk storage, learned how to dump that magnetic material on the disks and spin them at the proper rate so the material would cover them at the right density. All of that disk technology came from this one guy.

He came to me once and said, "How would you like to have a billboard where you're driving to work one day and you see, 'Smoke Camel cigarettes,' and the next day it says, 'Lucky Strike Means Fine Tobacco.' " I said, "Oh, gosh, how could you do that?" His idea was to have programmed electronic data and a big roll of paper with five pens coloring a whole new ad during the night while the paper slowly unrolled.

The world's first plotter, on a grand scale. Many of IBM's products have set industry standards and often have resulted in charges of antitrust law violations. How do you feel about that?

My father thought I was giving the business away when I settled the 1952 suit in 1956. I, on the other hand, had no quarrel with the Department of Justice. When I started here until now, I think they've always dealt reasonably and decently with the IBM company. We've been sued, but on balance, I think they've treated us with fairness.

That 1956 settlement said that we couldn't just rent, we had to rent and sell. We had to make a lot of our technology available to outsiders with low license costs, and I just decided that once that was settled I would forget it except for the broad general concept of trying to fight cleanly and not use any subterfuges and not tell any lies, but not tell the sales force to hold back.

So we went flat out, and I figured we'd probably have another antitrust suit somewhere along the line if we did what I hoped we'd do, which was to become successful in the computer market. We had been successful in the punched-card market and we had the knowledge and the know-how from the sales point of view and the applications point of view. All we needed was the hardware. If we ever had a monopoly, we had a monopoly on how to put things together.

Do you feel IBM was treated fairly in the case the Justice Department dropped in 1982?

No. I think we had a judge who was just totally committed to making things difficult for us. Instead of trying

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the thing on the merits, he was trying it on dramatics. He'd get up and walk away and wouldn't be around for some time, and sometimes when people were presenting evidence, he'd walk out of the room and so forth. He'd handled the '56 case and handled it quite well; therefore, he became an IBM expert down there in court.

No, I got very mad at Judge Edelstein, but I was out of the business by that time.

The case was vigorously prosecuted, then suddenly dropped. Now IBM can buy 12% of Intel Corp., and it's applauded as good for American business. What's antitrust and what isn't?

The atmosphere changes. I don't think people feel we can control Intel much with a 12% interest, but I don't know a great deal about that particular situation. But speaking just philosophically, the Justice Department wins most of their suits. But I must tell you that some corporations have a lot more money to put into those suits than the Justice Department does. Everyone, including me, would be surprised if the total effort of the Justice Department was matched to the total effort of IBM in that last suit.

But you know, you don't have a choice, really. It's a matter of judging how far you go, but you're really defending your whole corporation and your ability to perform for your stockholders. You've got to go flat out, which is what we did.

I think the United States government has to look to how they're going to help American industry abroad in the future. We were so far ahead of all our industry abroad for so many decades that it wasn't really necessary for us. But now when you are fighting for your life in the car industry, and we're very concerned about the electronics industry in Japan, then you've got to think about how much dumping and various other operations you're going to let Japan use — operations that are really not in consonance with our approach to trade. I admire Japan, but at the moment, they're a big headache.

What other thoughts do you have on Japan?

They capitalize on business family tradition; it goes back, I guess, to the people who banded together and followed the samurai and the shoguns who managed the place.

Their managers are pretty well compensated, so there is an economic drive to win. But you're beginning to see union drives for more recognition and less requirement to be just part of the society. They'll have their problems, but I think they've done a fantastic job in the way they've not only used but motivated people.

We had a woman from a Japanese university come and talk to our board once about management by consensus. I was fascinated by the way they never really come up with a decision point. It isn't unique; we manage by consensus in America too, you know. The

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THOMAS J. WATSON JR.

IN DEPTH

problem is that if you can't get a consensus in America, the CEO, if he's any good and has self-confidence, says, "Well, we're going to do it this way. If we're wrong, we'll find out we are, and we'll change around and do it the other way. But *we're going to move.*" It may well be that there are times in dynamic American companies when that ability to make a decision, wrong or right, will get us going and we'll beat the Japanese at consensus management.

During his visit to the United States in January 1982, Japan's Prime Minister Yasuhiro Nakasone said, "Both [the U.S. and Japan] would be advised to plan very far ahead for cooperation on high technology."

He also said something else that was quite profound. He said Americans never really come over here and study our markets and enter our markets with a full knowledge of what our industry needs.

Do you feel there should be more technology transfer worldwide?

Well, I think there should be limitless technology transfer with modest license fees.

You were the U.S. ambassador to the Soviet Union and are familiar with that culture. Control Data Corp. recently sold a computer to the Soviets and came under criticism for it. Do you think we should keep our computers out of the Soviet Union?

It's a very difficult question. We've never had much business there; we've sold a few computers, but it's a big headache. No sooner do you have them in there than somebody complains. It's controversial, so we haven't pushed hard. I think we would be better off if we sold Russia whatever she really needed, as long as it wasn't strategic. I would be for selling them anything that did not give them technological breakthroughs.

Do they need our technology?

Well, they would do much better with it, but they're not going to collapse without it. In fact, I don't see anything that's going to cause their collapse.

They're at a very low level of efficiency, and if they keep pumping along, they're not going to fade away. It would be nice if they would.

The Soviet Union and the United States are terribly overarmed with nuclear missiles, a situation you've spoken about often. I wonder if there isn't a way to use our technology to bring us back into a more reasonable frame of mind.

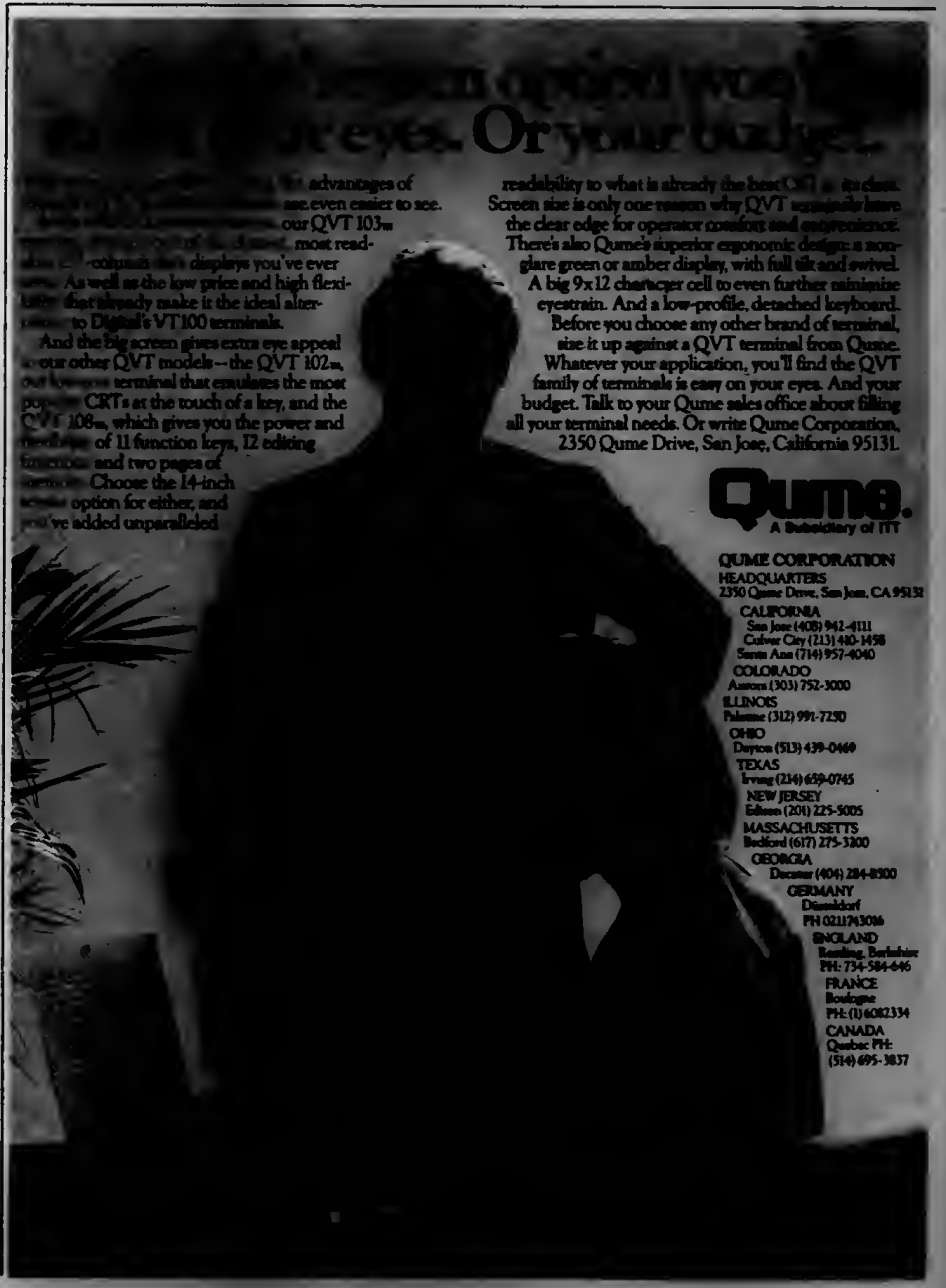
I wish there was; I think not. All weapons to me are inhuman, all killing is inhuman. Unhappily, it is from time to time necessary.

I think we have to get out of our present problem, because if we don't, we're going to destroy ourselves. I don't think we're going to escape through computers; I think we're going to do it with highly creative thinking, liberal arts kind of thinking. I believe we're where we are because we have been in the hands of the technologists and scientists, and I think in a way, they let us down.

> ***'I believe we're where we are because we have been in the hands of the technologists and scientists, and I think in a way, they let us down.'***

Do you feel there's a danger of a war initiated by a computer error?

Not really. But you see, the more the whole philosophy of launch-on-warning becomes attractive, the greater the danger. And as machines of war and missiles become more prey to preemptive strike, the more temptation there is to put more and more of the data in the hands of a computer and take the human being out of the equation. To the extent



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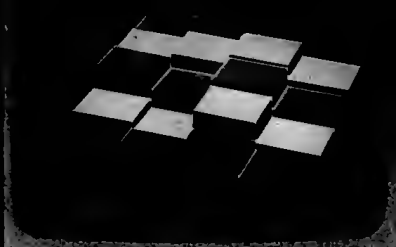

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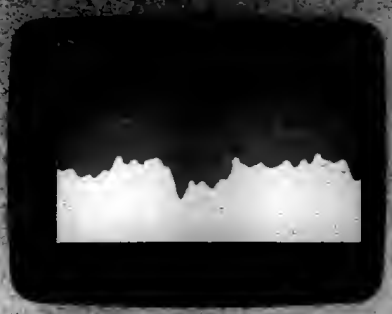

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IN DEPTH

that you do that, you are indeed putting the U.S. into a position where a computer could trip us up pretty badly. Could a computer do it now? Well, it would have to be a multiple failure, and the chance for that is way up in the millions.

How do you see computers affecting society?

I have no sympathy nor belief in the idea of a computer being able to replace a man, a computer being able to replicate itself or any of these notions people have. I normally espouse or give credibility to very advanced thinking, because I say, "Who knows? Who would have thought 200 years ago that we'd be flying around in the air and looking at a picture in our homes that was sent from several hundred miles away?" But as far as computers taking over the world, that's poppycock.

What do you see for the industry 20 years out?

I think this industry will be, by all odds, the biggest in the world. I think the United States will still be preeminent in it, and I think computers will probably be producing a better life for the world. Now this is presuming we have enough intelligence to recognize that thermonuclear weapons are useless except for deterrence or suicide. If we begin believing that sacrificing several hundred million people is worthwhile to get the world straightened out and that that would be victory, then my predictions would be quite different. You're looking at the guy who thinks he's probably the luckiest guy in America, though.

Why is that?

Well, you know, I'm looking back on a successful business career, made in a major way, I'm sure, by my father and by my associates, but I'm quite happy looking back on it. And a fellow who, 11 years after a heart attack, is still having a pretty good time with no impairment. And a person who has a vital interest that has nothing to do with computers that consumes most of my waking hours: the Soviet-American relationship and the gross misinformation in America about the utility of the thermonuclear weapon. Slowly I see Americans beginning to understand that the weapon is a useless weapon — except for the two reasons I mentioned to you — but so many politicians tell you differently. Some day in the next 20 years, the thermonuclear weapon will be taken out of politics if we're really going to manage it right, and when that happens, everybody can give a big cheer.

About the Interviewer

Jack B. Rochester is a professional writer specializing in high technology and science. He has written articles and conducted interviews for the Boston Globe, *the* Harvard Business Review *and other publications. Rochester is coauthor (with John Gantz) of* The Naked Computer, *a book which will be published in November by William Morrow. His firm, Joshua Tree Communications, Inc., is located in Brockton, Mass.*

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The Wise Manager's Basic Guide To

CONVERSION

CONVERSION
CONVERSION
CONVERSION
CONVERSION

By Marcia Ann Bowles

Special provisions in a system conversion contract can make the difference between a smooth transition and a fiasco of delays, lost data, inadequate new programming and botched enhancements. If techniques and safeguards are clearly spelled out in the software services contract, the purchaser can keep financial control of the project and accurately follow each phase as the conversion programming proceeds.

As many large companies give individual departments "computer independence" — the opportunity to purchase their own minis and micros, create their own data bases and gain freedom from the structure and constrictions of centralized DP — the managers of these departments often find themselves acting as "mini-DP managers." They are on their own, dealing with unfamiliar technology and making million-dollar decisions that will affect the future of the company and their own careers.

These managers are not computer novices, but they are not experts either. No large, experienced DP staff stands behind them ready to plan implementation of the project to the last detail. No attorney specializing in computer contracts is available to them from within their company.

Even the traditional DP manager with an experienced staff and legal support may be unaware of the basic safeguards his first conversion project will require as it proceeds. Practical business and DP controls embodied in a good contract can help his projects meet the performance standards he sets for himself and his department.

For a buyer to maintain control, the software conversion agreement must clearly define and separate the following programming tasks: 1) copying the files from one system to

(Continued on In Depth/22)

IN DEPTH

A Worst-Case Study

The following true story illustrates what can happen when the conversion process is not thought through. A good contract could have prevented or resolved many of this user's problems.

A middle-market shoe manufacturer and importer wanted to buy its own computer to end reliance on the centralized system of its parent company. A consultant performed a quick feasibility study (despite his lack of knowledge of the shoe business) and, not surprisingly, found that the equipment in which he had design and programming expertise would be perfect.

The company leased the equipment and signed a short, vague contract with the consultant, who brought in three programmers to convert the company records. Everyone worked hard for months to make the project a success. It was decided to use report comparisons to verify the accuracy of the files and programs of the new system. The invoicing and inventory systems were to be run first, followed by accounts receivable and payable.

When the first inventory reports were finally printed, they seemed to belong to another company. No comparison with reports from the parent was even possible. The few computerized invoices that were sent out resulted in outraged complaints from customers who were incorrectly charged for their purchases. Although many more programs and systems had been written, the shoe company management called the entire project to a halt, ordering the consultant and his programmers to leave the premises.

The matter ended up in litigation with the consultant demanding the balance due him on the contract and the company claiming it had been sold a useless system. Information disclosed in pretrial discovery demonstrated a combination of poor business judgment and poor DP practices.

First, despite limited experience with computers, management had decided to put all areas of the company on the system at once. The employees panicked. Honest and dedicated but lacking formal business training, they had developed their own idiosyncratic methods of inventory control and bookkeeping — methods that for one reason or another the consultant never fully understood. The consultant had never talked with the parent company's warehouse foreman and did not know that he had a terminal linking his warehouse to the parent company's computer, which he continually used to adjust the inventory.

Only live data was used for testing, and the tests produced unwieldy, though impressive-looking, six-inch-thick reports which nobody could check in the early stages.

Since the parent company's system and the new one were not compatible and inventory turned over very rapidly, the consultant decided not to copy parent company files but to enter data for new batches of shoes on the new system at the same time the parent company entered the

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IN DEPTH

Conversion Turns to Disaster

same data into its system.

Temporary input clerks were brought in to work around the clock entering input. No edits had been planned because the two women who were supposed to do the regular input were said to be so careful and accurate that none was needed. Unfortunately, the temporary entry clerks needed the best edits that could have been written.

No audit trails had been planned, and efforts by programmers and shoe company personnel to improve the inventory file only made things worse: No one knew who had changed what. The new reports were in a new format (admittedly better than the parent company's), but no one knew exactly where to look on parent company reports for comparable data. It was impossible to distinguish the mistakes caused by errors in the report program from mistakes caused by bad data in the files.

The software contract promised basically that the consultant would create a "computer system" and that the shoe company would pay an hourly wage to him and the programmers. The shoe company had no contractual control over how work was to be done and no milestones by which to measure performance progress. The consultant never understood what was really required, and no employee was assigned the responsibility of guiding him.

Lower level employees were in awe of the consultant and afraid to contradict him. Disgusted managers, angry at the time and money the project was consuming, seldom spoke to "those arrogant, know-it-all programmers." The senior programmer, a man with 15 years' experience, seemed to have been stuck in a first-generation time warp and apparently could only think in terms of boxes of keypunch cards. His programs were primitive and ineffective, and his documentation (all two feet of it) was so overwhelming that no shoe company employee could figure out what to do to get data into or reports out of the new system.

The company was only able to continue in business because its dedicated clerks worked overtime to maintain accurate manual records that paralleled those that were supposed to have been kept on the computer.

The entire matter was settled prior to trial because a downturn in the shoe business and an expensive trial would have sent the company into bankruptcy. In addition, the consultant did not want his work to see the light of day. Such exposure could have hampered his attempts to bid on the next job.

A good initial contract would have required better performance from both parties by defining what each was supposed to do and setting criteria for the other party to measure what was actually being done. Any serious misunderstandings on both sides would have been visible in weeks, not months, and all parties could have saved time and money.

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IN DEPTH

(Continued from In Depth] 19) another and verifying the new file against the original; 2) creating test files to test the new programa; 3) writing programs on the new system to maintain files and print reports; 4) improving the files and reports to take advantage of the greater capabilities of the new system; and 5) incorporating audit control procedures to help the buyer maintain the integrity of his files.

During the transition, the user should avoid making any changes or improvements. The most valuable computer-related asset he now has are the files built up on the first system. Their loss would be devastating to the organization.

Getting those old files copied to the new system intact must be the prime concern during the conversion. Enhancements can come later.

The contract should specify that among the first programs written should be those that copy files from the old system to the new so that identical files can be used on both systems to test programs.

At the outset, the buyer must determine which files need copying. Personnel files must be kept, of course, but a file that keeps track of inventory with rapid turnover might not need copying. The old inventory could be run out on the old computer and the new inventory put on the new system, saving time that would otherwise be spent reconciling the records and reports of both the old and new systems.

Once it is determined that a particular file should be transferred, the contract should provide for all related data to be converted: current files, year-end files from prior years, storage files which may need reactivation for the Internal Revenue Service or a lawsuit and related files that are vital but seldom used. The software contract should therefore identify the files that are to be copied and the name and title of the programmer who will handle this copying phase — probably one who has mastered both machines.

The contract should detail all methods by which the accuracy of the file copies will be verified. The best check is to use a file comparison program.

If the new and old aystems

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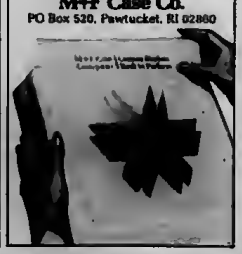


are very similar, a standard file comparison program may be bought off the shelf. If the old and new systems are different but compatible, the programmer may be able to write an individualized program that will do the comparison.

Since such comparison programming may be expensive, a buyer may want to do it only for important files. If the computers are incompatible, it may not be possible to use this method to ensure that all data is copied correctly; in that case, the buyer will have to resort to the far less satisfactory method of visually comparing each printed word and figure on reports produced from the old and new systems.

Determine which techniques will be used to verify the accuracy of the copied files, then state in the contract: 1) what data comparison techniques will be used, 2) for which files each type of comparison will be done, 3) the comparison programs that will be purchased or the name or title of the programmer who will write them, 4) the identities of the critical reports that will be used to verify that data has been correctly transferred from the old to the new computer, 5) the name of the person (or persons) to approve the results and 6) the criteria for accepting the new copy as identical to the original files.

Project Test Files

Using well-planned test files to test all new programs is the best method for gaining overall control of the conversion. Stating in the contract how and by whom carefully constructed test files are to be created and used gives the buyer a way of knowing what is — or isn't — happening on an ongoing basis.

Before the programmer uses production files for any live data testing, good test files must be created on the old system, copied over to the new one and used for the initial tests of every new program including the copying programs themselves.

A carefully selected test file should provide the following:

1. A limited quantity of output results to check, with a good sampling of different types of records.

2. Predictable and controlled results.

3. Simplified error finding. Many programs with reports occur with the first or last record of a file, the ones most likely to get dropped, printed twice or added twice. Knowing the first and last records helps the programmer find the most obvious and easily located errors.

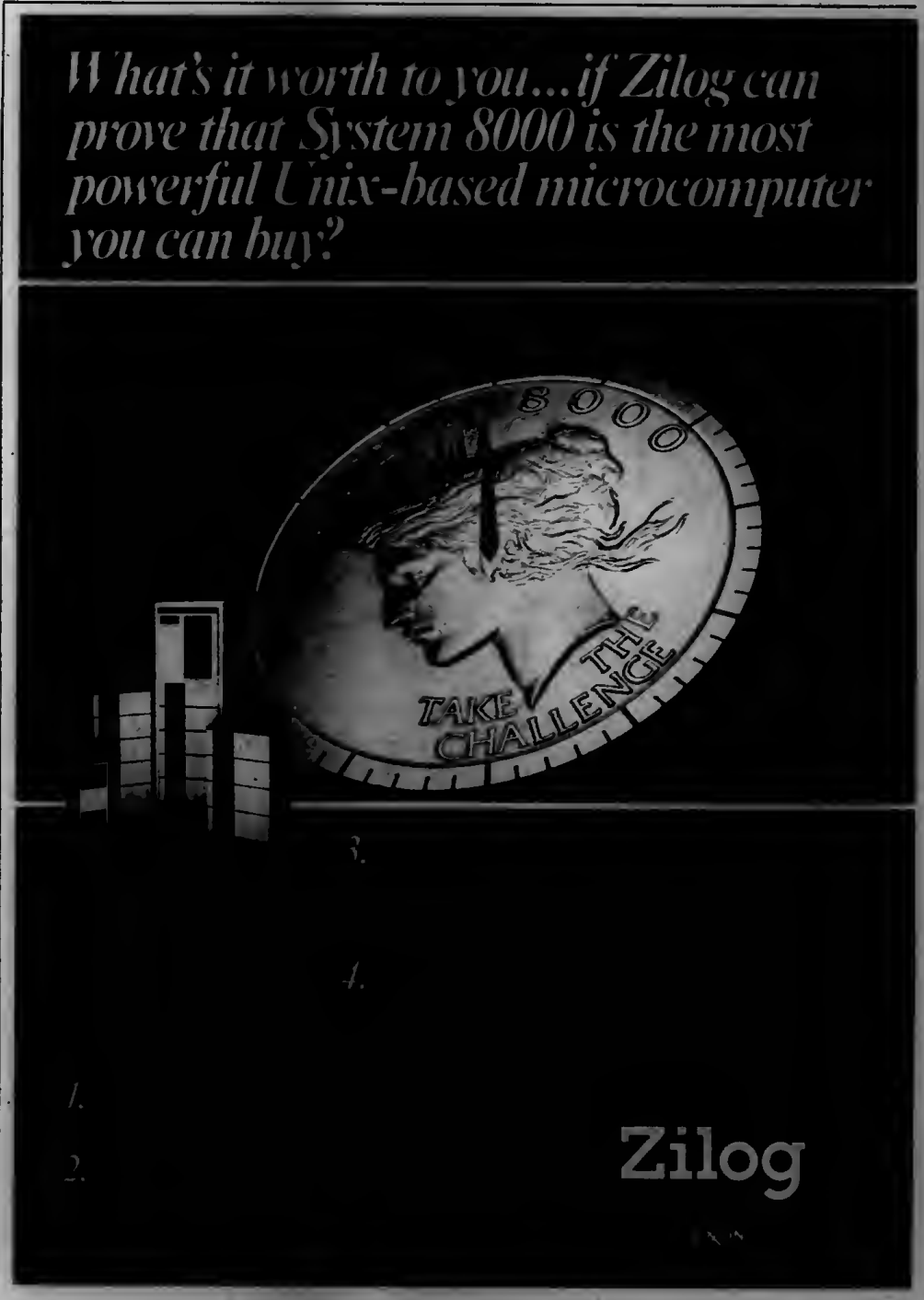
4. Reduced computer use time with a reduction in testing expense.

5. More tests in one day: results will be printed in seconds, not hours.

6. Certainty that the new programs and systems will be able to handle situations that caused big problems in the past.

When a programmer doesn't use a test file and tests with "live data" from the beginning, the programmer, the consultant and the buyer:

- Cannot tell what changed results from test to test — changes in the file or



changes in the program.

● Are required to look through voluminous reports, possibly measured by the foot, not the page, which are humanly impossible and inhumanly time-consuming to check accurately in the initial stages of testing.

● Don't know what sort of data went in, so they can't know what results to look for or what input might have caused a specific problem.

● Obtain fewer tests each day because each test will take a long time.

● May use thousands of records that test only one small part of the program and none that test other crucial parts, wasting expensive CPU time.

A good test file starts with a small number of records which a programmer carefully chooses from the production files and alters until they are challenging to the programs to be written, yet purged of sensitive information.

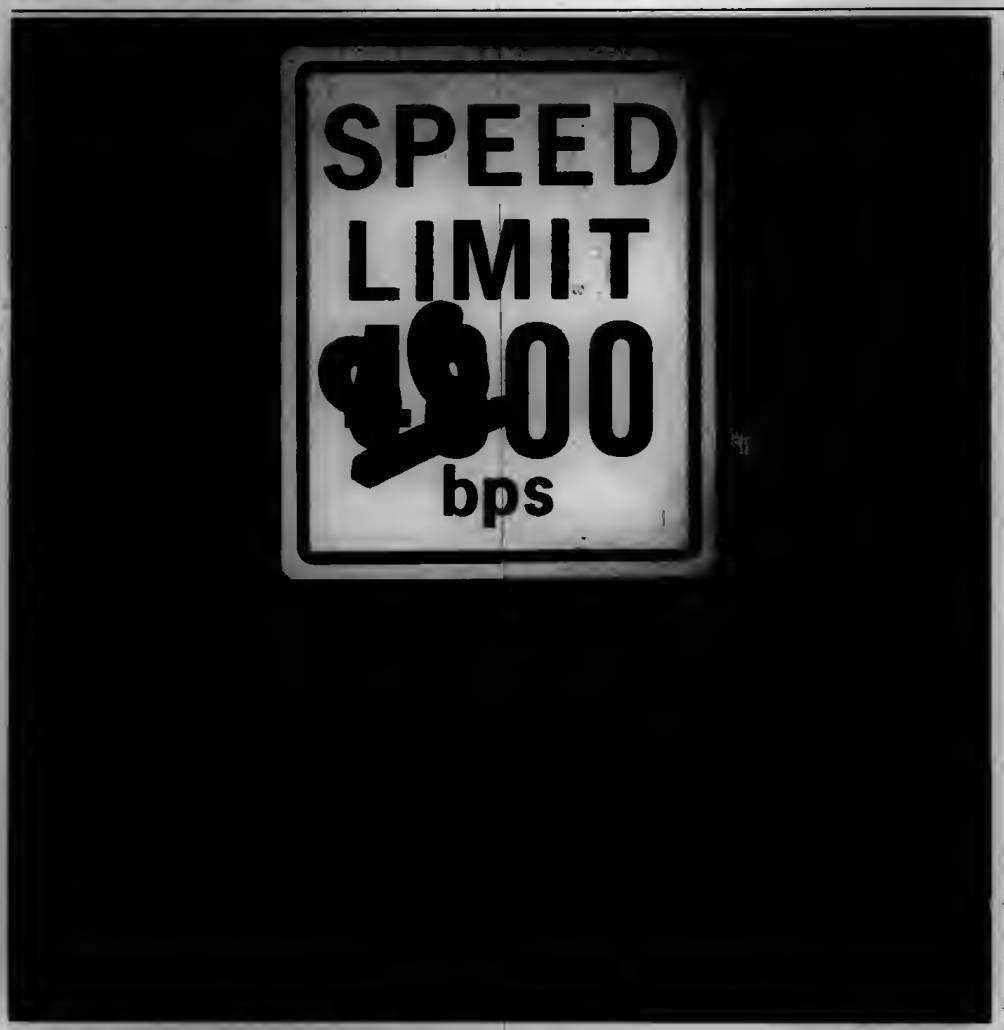
Selecting the right records is a difficult task in which the buyer's key personnel should get involved from the beginning. Only the buyer and his key people can spot the problem situations needed to make up test files that challenge the new programs being written. They should select a reasonable number of uncomplicated records (enough to print two to five pages of each printed report) and a copy of every record that has caused big problems in the past.

But what about company security? No buyer wants to have his employees' salaries printed for all to see. He doesn't want his trade secrets or his best customers' names listed on a report that outsiders will inspect. Actual salaries, names, addresses, order numbers, companies — all of this must be altered so that the test file results can be read by anyone: the programmer, the consultant, an employee assigned to check the results.

Provide in the contract for a key employee to disguise records selected for each test file by writing changes on a confidential printed copy of each file, changes the programmer will then put in his program before test reports for general use are printed.

The test files also need to make a match between old files from different years or different months that are needed for year-end or monthly comparisons. The same customer records on the main test file must appear on a history test file to see what changes have occurred from year to year. The same employee must be selected and the same inventory items, the same customers and so on must appear on previous year-end and any other related test files.

A good test file should give the user a way to see how the new system handles his most difficult situations. A real-estate manager's test file, for instance, might include a single building that mixes residential condominiums, rental apartments, office space and retail stores. An employee insurance test file would include the employee that has every possible insurance, is out on long-term disability, receives workman's compensation and has an adult retarded



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child who is covered under a special rider. If the new personnel insurance programs process him correctly, they will handle the ordinary insured employee.

Since the test files will be created on the old system, several backup copies should be made: One of each programmer's tests will be to find out if these files can be accidentally destroyed by his program. He may succeed.

Why should test files be covered in detail in the contract? Few programmers like to make up or use test files. Why? First of all, since they don't know the business for which they are programming well enough, they don't know what records to select. Second, they sincerely believe that their programs will work the first time. Why waste time writing an extra program to create a test file when your production program will run perfectly from the start? Writing a program to create a good test file is dull work which many experienced programmers will avoid if they can. Thus, the contract must provide:

- The name or title of each key employee who will help select individual records for the test file and supply the alterations needed to protect sensitive data.
- The name of an experienced programmer who will write the programs to select and disguise each test file.
- The reports to be produced on the old computer using the test files.
- The criteria for accepting test copies of the original reports from the old computer as being adequate to use to evaluate the reports produced on the new computer.

The contract should also provide that manual test input be prepared for the new computer using the same test input documents (salesman's order forms, invoices, new employee forms) that will be used for the actual system. There should be examples of well-prepared documents, sloppy documents and erroneous documents and a sample of all the common (and some uncommon) errors that should be rejected. The contract should state: 1) the kind and number of documents that will be prepared; 2) the name of the employee who will fill them out (ideally, the employee who prepares the actual documents); 3) the name of the person who will approve the results; and 4) the criteria by which the documents are to be evaluated.

'No shortcuts should be taken with the new maintenance programs. The contract should require that a highly skilled and experienced programmer do all work on them.'

Updating the Files

The most important programs on the new system are those that will add new information to the files,

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accumulate year-to-date figures and begin new accumulations upon certain fiscal calendar dates — the file maintenance programs. Files transferred perfectly from the old system to the new may have important information destroyed because of errors in maintenance programs. For example, maintenance programs that fail to collect withholding tax information properly may destroy such files as effectively as a poor initial copy.

Data that has been lost from the files because of faulty updating can be very difficult to recover or re-create. All too often, such errors do not show up until an annual report is produced. By that time, the old files from the old system are in dead storage, and parts of the files on the new system have been correctly updated and changed many times. Getting back that old missing information without wiping out any of the good new data can be as tricky and expensive as the entire original conversion.

The old maintenance programs will not work on the new system. Programs copied line by line from one system to another will not work exactly the same way because of hardware differences. Old programs have usually been patched, changed and altered (often by programmers who have since quit), until they work in a way only Rube Goldberg could appreciate. The new system may even require a different programming language.

Maintenance Programs

New maintenance programs must therefore be written to update and maintain the buyer's files. No shortcuts should be taken with these important programs. The contract should require that a highly skilled and experienced programmer do all work on them.

Since hidden problems may often show up only on reports produced quarterly or annually, the contract must specify the procedures for testing all maintenance programs and must require the production of all cumulative reports.

The contract should require that carefully selected test files be put through an entire cycle and used as input for all reports that will ultimately be produced; all possible updates and date-dependent changes should also be tested as part of this process. When the test file results have been deemed accurate, a full-scale systems test should be done using the same cycles and the same programs with live data as the initial input and enough simulated changes to test every possible update situation.

If during these tests a report is found to give wrong information, there are two possibilities: the files from which the report is printed have bad information or the program that prints the report is scrambling the good information it gets and printing the results incorrectly. The contract should therefore require a written explanation for errors that appear in the new reports and evidence that the necessary corrections have been completed.

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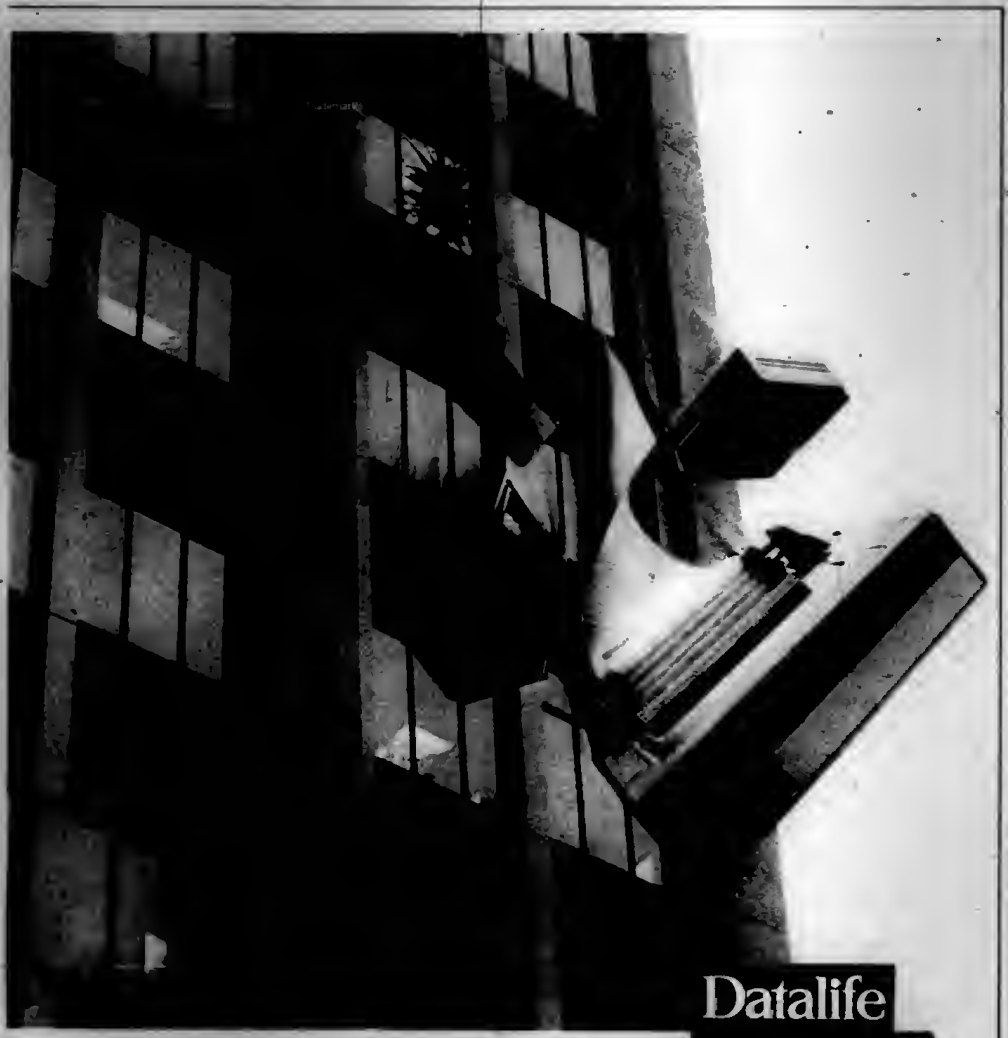

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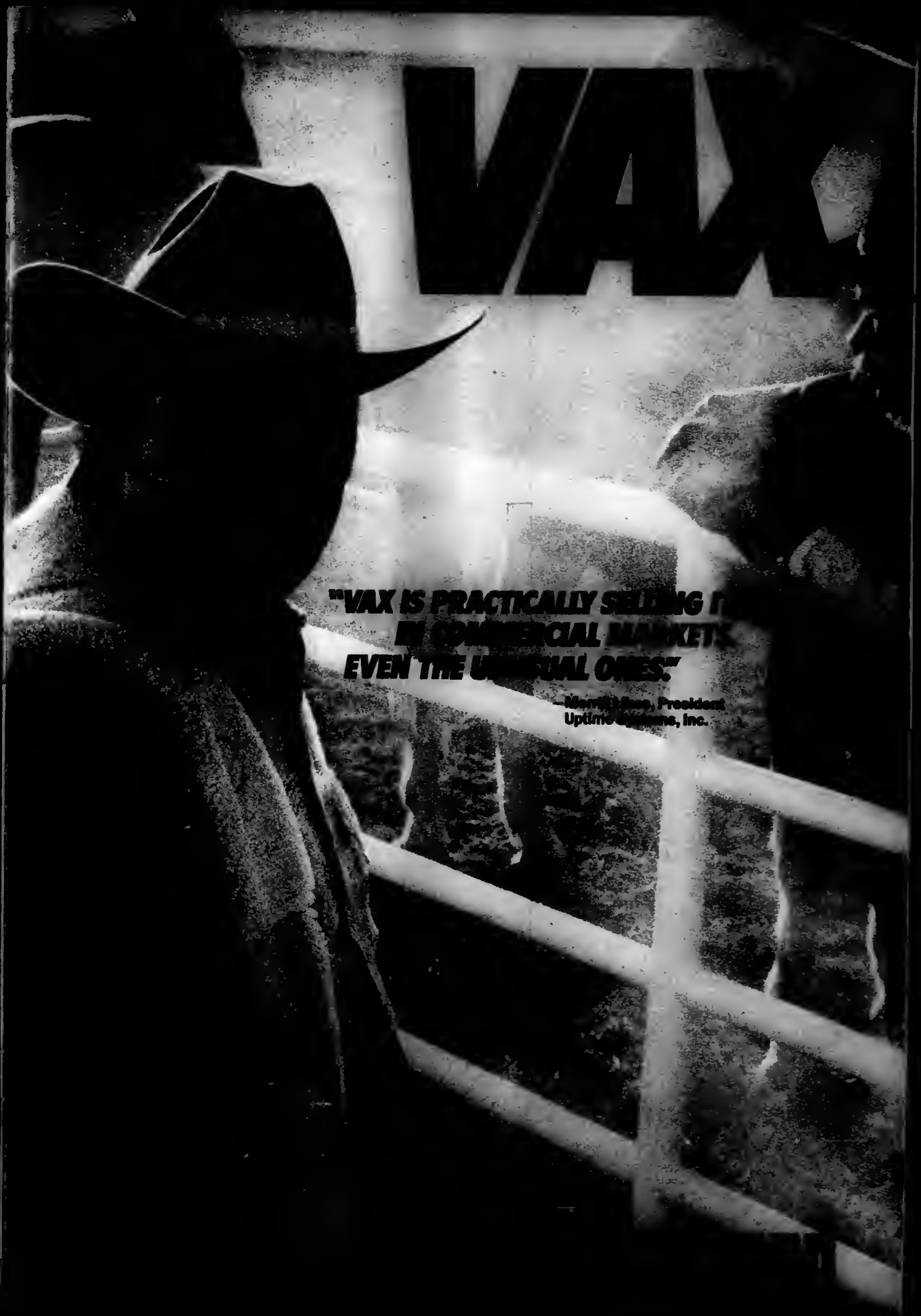
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that his files have been copied intact, that the new maintenance programs update them correctly and that he will continue to receive his vital reports, it is time to make all the improvements, changes and enhancements that induced the business to purchase the new system.

The expensive programmer who knows both machines will no longer be needed. Someone with expertise only on the new machine can program these enhancements. The contract should provide that enhancement programs be implemented only after the buyer is satisfied with the integrity of his files and the accuracy of his reports. Further, the contract should state the name or kind of expertise of the programmer who will do the enhancement work.

Data entry and audit control. Many projects may be error-prone because insufficient consideration was given to either data entry control or the development of protective features such as audit control trails. It is important that the software contract require these two items to be considered as part of the overall planning for the conversion.

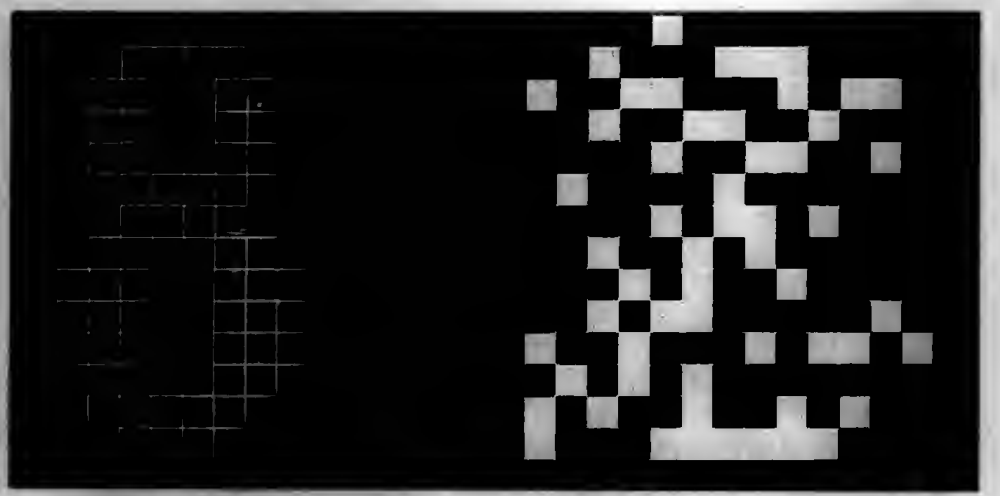
The consultant should look at the manual system now in use. If that system is inadequate, it is important first to provide for a good working manual system which should include original documents that keep all relevant information in one place, boxes for numbers that must be written in and preprinted instructions and numbers wherever possible. Lines of responsibility for gathering initial information should be clear, as should time schedules and the responsibility for having this data delivered to the entry clerk on time and in an organized manner. The contract should either state that such a study will be done or set forth the standards to be met to have data entered promptly.

The consultant should help decide on any necessary changes, and they should be incorporated into the contract. The amount of data to be keyed into the computer should be minimized and the identification data kept as small as possible. To reduce errors and misspellings, numbers rather than letters should be used.

Studies have shown that error frequencies increase greatly when an alphabetic is used as part of a key-in data identification field. Repetitive printed information can be stored in a computer table accessed by simple numerics.

Before a data entry clerk begins to enter changes to items in the files, he should enter the count of the number of documents he will key in and a money total or inventory total (if relevant). The data entry program should be planned so that these totals are entered first, with the computer keeping a running count of every item entered. Then if the entry clerk becomes distracted and forgets one item or enters an item twice, the totals will not match and he will know there has been an error before the actual master files are changed.

By contractually requiring



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such improvements, the buyer will know that the consultant can plan an efficient computer system without having to work around initial inadequacies.

Editing controls in the maintenance programs can be planned by the consultant and defined in the contract. Numeric fields can be checked to ensure no alphabetics slip in. The buyer can help the consultant create "reasonableness" limits.

If several different documents use the same basic information, with just a few changes, the system can be programmed so that basic information need be entered just once and only the changeable information keyed in the second time. A trial run can be made of programs that change the file to be sure the results will be correct. Provision for including such specific necessary data entry controls should be made in the contract to ensure a smooth transition.

A good audit control trail is the key to detecting fraud, spotting cover-ups of mistakes and tracking surges of activity that might indicate problem entries. The audit control trail should be planned for at the outset, rather than incorporated later at much greater expense. At a minimum, the buyer should see the additions, changes or deletions to any file. The buyer's accountant should be consulted for additional specific suggestions for safeguards tailored to his business, and they should be included in the software contract.

An audit trail should at least consist of a computer-printed daily entry list with both count and money totals before they are entered and a second list showing the actual changes after they have been made in the files. A follow-up list of itemized changes that were accepted on the files but incomplete for some reason will be useful to the clerk who maintains the files. The computer should assign a consecutive sequential number to each new record. Then, if other identification data is missing or incorrect, it can be located.

The system can be programmed to record the sign-on identification of the person who changes or deletes a record. Depending on the types of files involved, management might want to receive periodic reports showing other evidence of kinds of changes that have been made. These kinds of lists are key management tools to control the accuracy of files and to detect and prevent fraud. They should be required in the contract.

To detect and deter fraud, many DP managers decide not to permit easy deletion of any records on the file. Corrections to an erroneous record are made by adjustments, credits or debits, by zeroing out fields or by blanking out erroneous data. If a record cannot be deleted, it will be more difficult to cover up problems that develop later or to conceal fraud or theft.

Since files may become very large, deletions must be provided for, but only under very careful monitoring and with procedures elaborate enough so no one can trigger them by mistake. Regarding deletions, a contract for the software should state whether deletions will be permitted, how and when they will be done and the kind of records that will be kept to document the deletions.

File diagnosis programs should be included among the programs to be written and should be listed in the contract. They should examine each record and flag missing or illogical information — for example, a record that shows cash received without showing what was sold or an employee record that indicates he has

'A good audit control trail is the key to detecting fraud, spotting cover-ups of mistakes and tracking surges of activity that might indicate problem entries. The audit control trail should be planned for at the outset, rather than added later at far greater expense.'

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99 dependents. They should print reports to enable someone to locate the correct information and enter it on the file before important periods, such as the printing of year-end inventory turnover reports or preparation of W-2 tax forms.

Thus, the relevant contract should state: 1) files for which a file diagnosis program will be written, 2) the name or title of the person who will supply diagnostic criteria, 3) the name of the programmer who will write the programs and 4) the criteria for accepting the output of the diagnostic program. The kinds of audit controls to be built into a system should be carefully defined in the contract. An audit control trail is a good investment for management and protection to the consultant who will design the system.

Pace of Conversion

The actual conversion should be paced to suit on-site personnel in the business environment, and the time frame should be specified in the contract.

A low-key, friendly office with highly dedicated, specialized employees who prize the way they do their job and work hard to get things right will probably become demoralized and confused by a hasty, radical changeover. Consider the possibility of changing one area at a time — of letting one department become thoroughly familiar with the use of the new computer before introducing the next department to it.

On the other hand, if the business environment is one of sophisticated technical personnel, articulate in their dissatisfaction with the old computer and eager to make a change, the conversion can proceed as quickly as technically possible.

State in your contract: 1) the anticipated order and schedule of the changeover, 2) the name and title of the person who will coordinate each phase, 3) any dependent circumstances that would justify postponing a scheduled change or extending the target dates. For example, the order entry program might need to be completed first before the inventory control programming can begin.

Financial Compensation

Critical to success is the negotiation of fair and reasonable compensation. A business has every interest in keeping the consultant and programmer financially satisfied. Compensation should be structured to give them incentive to finish what they started and to earn a reasonable profit.

Consultants and programmers provide a very personal, idiosyncratic product. They cannot be easily replaced in the middle of a project. A new programmer cannot pick up immediately where the old one left off. Many consultants and programmers protect themselves from personal liability by incorporating and have notoriously shallow pockets despite the high fees they command. The user may be "protected" contractually, but if one of them quits, stops producing good work or goes out of business, the user will have to bear the cost of starting over again.

Financial compensation formulas vary widely, but at least part of the compensation should be tied to the satisfactory completion of each phase or milestone of the contract to ensure that the user will have adequate control over the entire conversion.

Above all, the contract should be understandable to both parties. Both computerese and trade jargon should be reduced to understandable English. A term that is slightly confusing at contract time can give rise to expensive litigation later if one party or the other is harmed by this misunderstanding.

About the Author

Marcia Ann Bowles is associated with the New York law firm of Salon, Marrow, Dyckman & Trager.

Bowles received her law degree from Fordham University School of Law and her undergraduate degrees from the University of Minnesota. She entered the data processing field as a programmer and during the next 10 years worked her way up to become project manager with a major New York bank before deciding to go to law school.

Bowles worked as a DP consultant while attending law school and now specializes in computer law.

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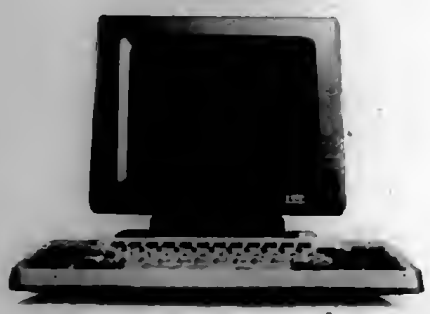

ITT Courier 1700.

Biggest Deterrent Not Economic

Futurist: Teleconferencing Use to Increase

By Phil Hirsch
CW Washington Bureau

ANAHEIM, Calif. — Even though video teleconferencing cannot be cost-justified in most cases, it is likely to become much more popular during the next few years.

So said Robert Johansen of the Institute for the Future, who has been following the technology closely for the last 15 years. Johansen spoke here recently at the International Communications Association's (ICA) annual conference.

The biggest single deterrent to greater use of teleconferencing systems concerns social and psychological aspects rather than economic, according to Johansen. Prospective users fear they will not be able to interact as effectively as they can in a face-to-face environment — and often they are right, Johansen said. But there are situations in which graphics, audio or video teleconferencing is essential, he pointed out, and they are gradually making the technology less alien to the business community.

An essential application is typically one that involves physically separated individuals who must work with each other on a daily basis. For example, the National Aeronautics and Space Administration, which usually has multiple contractors working on the same project, uses teleconferencing to link them, Johansen explained.

In addition, teleconferencing saved Boeing Aircraft Corp. considerable time in designing the 747 jet.

Costs Coming Down

Meanwhile, teleconferencing costs are coming down, Johansen reported. Public teleconferencing services such as those being offered by American Bell, Inc. represent one way users can begin teleconferencing without making a capital outlay.

Johansen predicted that over the next five to 10 years, systems integrating teleconferencing with other computer-based, on-line functions will come into wide use.

Bandwidth compression and portable systems capable of working in existing office environments will lead to dramatic cost reductions, Johansen added.

There was extensive evidence of these latter developments on the ICA exhibit floor, where Compression Labs, Inc. of San Jose, Calif., unveiled the Mini Conference System which, according to the company, can be used as an alternative to a teleconferencing room [CW, June 6]. The system is priced at $35,000; a teleconferencing room costs "$200,000 or more," Compression Labs said.

The company also said its VTS 1.5E transmission system, introduced last month to reduce a 6M bit/sec analog video signal to 512K bit/sec, now provides further compression to 384K bit/sec.

Another ICA exhibitor, the McMichael Division of the UK's General Electric Co., demonstrated a newly developed 1.5M bit/sec digital video encoder/decoder, which is said to translate European video signals into U.S. formats and vice versa. International video teleconferencing is one likely application, a spokesman for the vendor said.

Tools Allow Ethernet Link

IRVINE, Calif. — Abie Computer, Inc. has announced two products said to allow the user to connect to an Ethernet local-area network through the session level, Level 5.

Easyway Ethernet Port, supporting Layers 1 through 4 of the network architecture, is a Unibus Ethernet controller that connects Digital Equipment Corp. PDP-11 and VAX-11 systems to an Ethernet network. The Connect software package handles Layer 5.

The Easyway Ethernet Port is said to implement the International Standards Organization's draft transport specification, DP8073, based on software technology developed by Intel Corp. Easyway is accompanied by a software driver that is compatible with the host operating system and the optional Connect session layer software, according to a vendor spokesman.

Easyway is priced at approximately $5,000, and Connect sells for approximately $1,000. More information is available from Abie Computer at 1732 Reynolds Ave., Irvine, Calif. 92714.

Memorex Cluster Controller Supports SNA/SDLC Protocol

SANTA CLARA, Calif. — Memorex Corp. announced a large cluster controller said to support IBM's Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) communications protocol.

The 2074 supports the remote I/O operations of up to 32 devices with IBM Category A interfaces, according to a vendor spokesman. It is said to be functionally equivalent to models of the IBM 3274 remote cluster controller.

The 2074 operates in a point-to-point or multipoint environment at transmission speeds up to 56K bit/sec and will communicate with IBM 370, 30 series, 3080 series and 4300 series processors. It is said to be fully compatible with data links controlled by IBM 3704/3705 and 3725 communications controllers.

The 2074 employs a modular design concept developed by Memorex, called Memorex Common Architecture, in which each functional component is separated into independent hardware and firmware modules that communicate and interact with each other via a parallel bus.

The 2074 is priced at $13,595 from Memorex at San Tomas at Central Expwy., Santa Clara, Calif. 95052.

American Bell Takes Wraps Off Its First Portable Terminals

MORRISTOWN, N.J. — American Bell, Inc. has announced its first portable terminals, designed to allow the input of data from the field directly into central computers.

Available July 4, the hand-held Portable Data Entry (PDE) 100, with a numeric keyboard only, and PDE 200, with an alphanumeric keyboard, are powered by rechargeable batteries and accept optional acoustic modems and RS-232C ports. Data is stored in 16K bytes (PDE 100) or 32K bytes (PDE 200) of random-access memory until it is communicated to the central data system.

The PDE 200 also permits information to be downloaded into memory from the main data system, an American Bell spokesman said. A second programmable keyboard on the PDE 200 permits designating function keys for programs.

The terminals also feature input via terminal keyboard or bar code reading wand, 16-digit LED display, data transmission to computer or other storage devices, cloning capability and line speeds of 300, 600 and 1,200 bit/sec.

The PDE 100 terminal is priced at $965 and the PDE 200 terminal at $1,450. Lease options are also available.

More information on the PDE terminals can be obtained through regional American Bell Advanced Information Systems offices or from American Bell at 100 Southgate Pkwy., Box 1955, Morristown, N.J. 07960.

SNA/SDLC Converter Unveiled For IBM, Sperry Protocol Users

MOUNTAIN VIEW, Calif. — Kaufman Research Manufacturing, Inc. (KRM) has announced the Model 8700, an IBM 3270 Systems Network Architecture/Synchronous Data Link Control (SNA/SDLC) protocol converter for Sperry Corp. Uniscope and IBM binary sychronous protocols.

The Model 8700 provides SNA 3274/3276 compatibility with physical and logical devices as well as emulation of IBM 3278 terminals from a variety of Ascii terminals, the vendor said. The multiple-microprocessor architecture of the Model 8700 allows the unit to support up to eight asynchronous lines and one SDLC synchronous line, with all lines simultaneously running at 19.2K bit/sec.

All CRT terminals supported by KRM's earlier binary synchronous devices will be supported by the Model 8700. In addition, the unit is available with KRM's Side Door switch, which allows a single terminal to communicate with the IBM host and another asynchronous host by keyboard-controlled switching.

KRM protocol converters are compatible with all private branch exchanges and port-selection switches as well as most local-area network interfaces, a spokesman said. The Model 8700 ranges in price from $3,395 for a one-channel unit to $8,295 for an eight-channel unit.

Kaufman is located at 145 E. Dana St., Mountain View, Calif. 94041.

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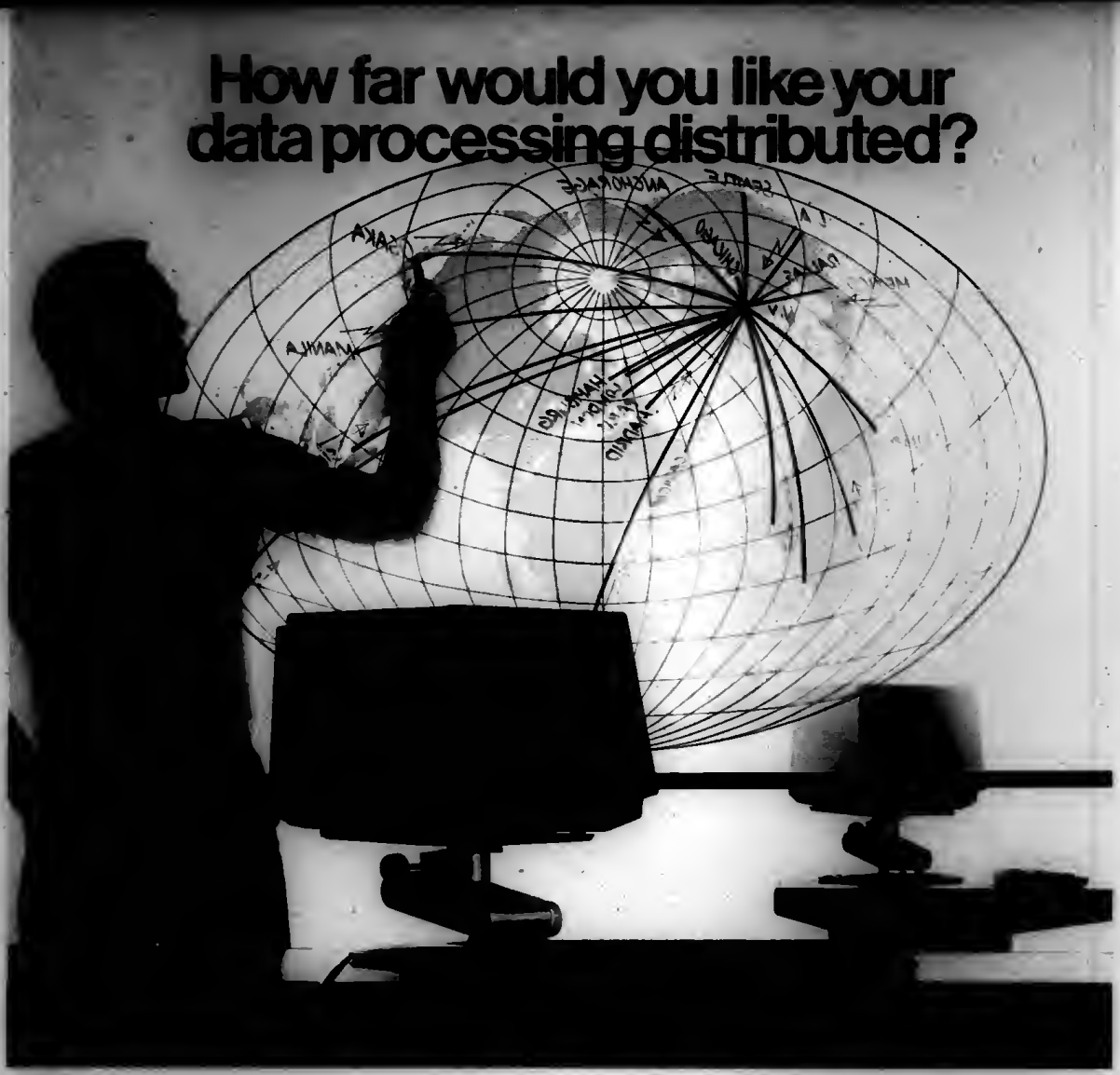

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Multiple-Data Base, T/S Applications

RCA Microcomputer Terminal Series Bows

LANCASTER, Pa. — RCA Microcomputer Products, Inc. has announced a series of terminals for multiple-data base time-sharing and dedicated, direct computer-connected applications.

The All-Purpose Terminals (APT) are said to feature menu-controlled operation; programmable "personality" to match specific communications requirements for each data base; built-in, direct connect, originate/answer/autoanswer 300 bit/sec modem; tone or pulse autodialing of up to 26 stored telephone numbers; and automatic logon, according to a spokesman for the vendor.

A single key can dial a stored number, send the logon sequence to the host computer and return terminal control to the user, a vendor spokesman said. APT can also be used as an autodialer for voice communications.

APT terminals provide video output for a 40- or 80-char., 24-line display on a standard monitor and a radio frequency output for a 40-char. display on Channel 3 or 4 of a standard television. An RS-232C port allows APT to be used as a primary or satellite terminal for personal and business computers, the spokesman for the vendor said.

An APT unit can also provide communications from a computer to time-sharing data bases. High-speed modems and other accessories may be connected to the RS-232C port, according to the spokesman.

APT models without video monitors sell for $399; those including monitors are priced at $598. More information is available from the vendor at New Holland Ave., Lancaster, Pa. 17604.

Tandberg Unit Emulates DG 6053/D200s

ARMONK, N.Y. — Tandberg Data, Inc. has announced the availability of a unit said to be a smart, ergonomically designed terminal that emulates the characteristics of the Data General Corp. 6053/D200 family.

The Model TDV 2235 reportedly not only emulates virtually every feature of the 6053/D200, but also provides several features that are not available on the DG product, including a 15-in. screen and a seven by nine dot matrix to enhance readability and reduce operator eye strain and fatigue.

Features include a nonvolatile, electrically alterable read-only memory; operator menus; a height-, swivel- and tilt-adjustable stand; a 60-Hz refresh rate; and a light intensity control.

The single-unit price of the Model TDV 2235 is $1,875 from Tandberg Data, P.O. Box 99, Labriola Court, Armonk, N.Y. 10504.

PSSC, Subsidiary Lower Dsaf Rates

WASHINGTON, D.C. — The Public Service Satellite Consortium (PSSC) and its for-profit subsidiary, Services by Satellite, have lowered rates for the use of their Denver Satellite Access Facility (Dsaf).

The basic daytime rate for uplinking services from Dsaf has been reduced by 10% and by 22% for nondaytime uplink. There is a one-hour minimum charge.

The hourly rate for profit organizations for video uplinking is $135 for one to 10 hours, $115 for 11 to 30 hours and $100 for 31 to 60 hours on a monthly usage basis. More information is available from PSSC, Suite 907, 1660 L St. N.W., Washington, D.C. 20036.

Device Performs Clocking Functions

FAIRFAX, Va. — High Tech Tools has announced the Modem Eliminator in a Cable (MIC). The device is used to perform clocking functions between a computer system and a statistical multiplexer.

The unit is said to feature multiple transmission rates including 1,200, 2,400, 4,800, 9,600 and 19.2K bit/sec. It comes with a loop-back feature, and all switches are located on the exterior of the device to make configuration easier, the vendor said.

MIC comes as a 6-ft RS-232C ribbon cable and costs $150. High Tech Tools can be reached through P.O. Box 3424, Fairfax, Va. 22038.

Add Unveils Color Terminal

HAPPAUGE, N.Y. — Applied Digital Data Systems, Inc. (Adds) has announced the Viewpoint/Color terminal, featuring a tilt-and-swivel screen, glare reduction and a low-profile keyboard. The set-up mode used to select colors can reportedly be invoked while the form is on the screen, allowing users immediate sight evaluation.

The terminal includes business graphics capabilities and assigns up to eight colors, including red, green, blue, cyan and yellow.

Priced at $1,295, the terminal is available from Applied Digital Data at 100 Marcus Blvd., Happauge, N.Y. 11787.

Built-In Beats Bolted-On

Braegen's Way Puts True 16-Bit Personal Computing Inside A Low-Cost, 3274-Compatible Cluster Controller.

Several companies now offer personal computing capability as part of their 3270 terminal package. Their approach, however, has built-in problems—primarily because the personal computing *isn't* built-in, but just bolted on.

Braegen's way works better. Because our new 8410 Cluster Controller features integral personal computing, the user gets maximum processing versatility and performance while the DP Manager gets maximum control and cost savings.

More Versatility And Power. You can attach up to eight ergonomic display stations to the 8410—and with one keystroke turn them all into true 16-bit PCs. You can access a wide range of applications software operating under MP/M-86. And you can upgrade from 128 to 640 Kb of RAM—or integrate a 10-Mb Winchester drive for optimum multi-user response and security.

More Control And Economy. Undoubtedly, it is the control you gain and the dollars you save that really distinguish the 8410. Because the PC capability is integrated into the controller, each user is tied into the overall corporate communications network—giving the DP Manager control over critical computer resources.

Just as important is the considerable cost control achieved. First, the 8410 *starts* as a more cost-effective alternative, even operating only as a 3274 remote cluster controller. But by adding multi-user PC capability, the 8410 can save you thousands of dollars—and a lot of space—in equipment alone. There's no investment in additional software for each workstation, or in additional communications lines. Expensive resources—such as letter-quality printers and Winchester drives—can be shared. And a unique remote-maintenance feature that lets our Field Engineers dial up and diagnose the 8410 from any location reduces down-time costs.

For ten years now, Braegen's way has worked for an impressive base of customers. The 8410 with integral personal computing; its low-cost counterpart, the 8400 Remote Cluster Controller with up to 16 attachments; as well as our nationwide sales and service network are just three persuasive reasons why.

Put Braegen's way to work for you. Call or write The Braegen Corporation, 20740 Valley Green Drive, Cupertino, CA 95014 (408) 725-1252; TWX: 910-338 7332.

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Dual-Mode CRT Offers Ansi, Honeywell Compatibility

MINNEAPOLIS — The Teleray Division of Research, Inc. has announced the Model 16/7801, a dual-mode CRT terminal that offers compatibility with the Ansi X3.64 standard and the Honeywell, Inc. 7801 CRT terminal.

The 16/7801 features 32 macro keys that can be recoded by the user to represent alternate characters or control sequences. Twelve of these keys are initially coded as 7801 pre-programmed function keys.

The 16/7801 has a 512-char. non-volatile function memory that will accept up to 32 variable length, user-programmed functions. This function memory can be expanded to include any unused portion of the unit's 96-line display memory.

In the Ansi mode, the 16/7801's display memory can be organized by the user or computer system into any reasonable number of pages by redefining logical line length and page length. Up to 255-col. line lengths can be accommodated.

The 16/7801 is available in three different enclosure types (9-, 12- and 15-in. CRTs) and three CRT phosphors (white, green and amber). A 15-in. model costs $1,995. Teleray can be reached through Box 24064, Minneapolis, Minn. 55424.

Land Hybrid Now Available From Zenith

SAN ANTONIO, Texas — Datapoint Corp. has announced that the Local-Area Network Driver (Land) hybrid component for the Datapoint Arcnet Resource Interface Module (RIM), designed and manufactured by Zenith Radio Corp. under a non-exclusive license, will be commercially available from Zenith CRT & Components Operations.

A complement to the RIM and transceiver chips already available through Standard Microsystems, Inc., Land reportedly replaces 30 discrete components and provides the link interface between the controller and the transmission cable in the interface module for the Arcnet network.

Designed for Datapoint to facilitate the manufacturing and quality control process as well as to reduce costs, the line driver/receiver hybrid is said to provide the circuitry required to interface the controller to the baseband coaxial serial data link. In a 1⅜-in. by 2-in. component, Land provides the necessary noise immunity and filtering for interference-free transmission on the coaxial cable, the vendor said.

The Land hybrid costs $9.10 from Zenith CRT & Components Operation, 1000 N. Milwaukee Ave., Glenview, Ill. 60025.

Omnitec Adds Smart Modem

PHOENIX — Omnitec Data, Inc. has added an autodial, direct-connect, full-duplex smart modem to its line of Bell 212A-compatible devices.

The 1,200-bit/sec, Federal Communications Commission-approved Model 6212 modem is said to sense and select automatically the correct dialing mode, operate in the CPU mode and have a stored memory directory of up to 10 numbers.

The unit employs a standard RS-232C interface, local analog loop test through EIA interface, user-programmable hang-up code, speed dialing from memory and prompt routines.

The unit costs $495 from the firm at 2405 S. 20th St., Phoenix, Ariz. 85034.

IB Graph for DEC users. The most cost-effective way to get in touch with your data.

Meet the latest Used Software package from Data Processing Design, Inc. It's called IB Graph.™ Nothing less than the most complete, most cost-effective system for business graphics on Digital PDP-11™ and VAX™ processors.

Of course, you could buy more expensive graphics software, but you'd probably end up with more capabilities than you'd actually need—which wouldn't be cost-effective. Or you could buy *less* expensive graphics software, that simply can't do the job. Again, not very cost-effective. IB Graph is the ideal compromise, giving you literally everything you need, and no more.

IB Graph is a multi-user, interactive businss graphics system that lets you generate graphs in minutes instead of days. And get quality, full-color bar charts, line charts, or pie charts for immediate publication or presentation. With IB Graph, you can better visualize and analyze your data. You can make quicker decisions and increase your efficiency—not to mention your company's profits. Best of all, IB Graph is easy to learn and simple to use, whether you have no experience in computers at all, or are an experienced programmer.

IB Graph outputs to a variety of graphic CRTs and plotting devices. And it will continue to be compatible with future hardware announcements by DEC.

If you'd like more inlormation, call or write to us at DPD. We'll be happy to tell you more about IB Graph.

IB Graph. You can buy a more expensive system. Or a less effective one.

You can't buy a better one.

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It's designed especially for executives who are responsible for the selection or use of micros in their organizations, executives who use micros as decision support tools, and business managers who employ (or want to employ) micros to manage their businesses.

The Conference Program

Thursday, June 23 & Friday, June 24

The Thursday and Friday conference program is divided into four major "tracks," but you are not required to sign up for a particular group of sessions. You may select the sessions you need from any of the 48 sessions available and create a conference program designed to suit your unique information needs. You may even choose to attend one day instead of two if you want. A detailed agenda will be sent to you prior to the conference for your advance planning, so you don't waste a minute!

Special General Session for Thursday Attendees:

The Revolt of the Masses: Micros and the Changing Role of DP! *(5:00 p.m.-6:00 p.m.)*
Dr. Michael Hammer, President, Hammer & Company

1. Personal Computing in a Corporate Environment

For Executives in large corporations who are involved in using micros in distributed data processing or as standalone executive workstations, the EMCE conference program includes:

Keynote: Increasing Corporate Productivity via the Personal Computer *(Thurs., 9:00-10:00 a.m.)*
Macdonald Resnik, Executive Director of Systems, Ford Motor Company

The Executive Professional Workstation *(Thurs., 10:00-11:00 a.m.)*
Evelyn Wilk, Consultant, Arthur Andersen & Co.

DDP with Microcomputers *(Thurs., 2:00-3:30 p.m.)*
Moderator: Jerrold Ekern, President, Office Sciences International
Panelists: Phil Dixon, MIS Manager, Apple Computer, Robert A. Miller, Special Assistant to the Deputy Secretary of Treasury, U.S. Treasury Department

The Information Resource Center *(Friday, 3:45-5:15 p.m.)*
Moderator: Thomas Kassnick, Researcher, Stanford Business School
Panelist: Alan Gross, Director of Systems, International Paper Company

The Role of Apple and IBM in Corporate Computing *(Friday, 3:45-5:00 p.m.)*
Moderator: David Hunnell, Publisher, "PC World"

New Issues of Confidentiality and Security in Organizational Information Processing *(Friday, 9:00-10:00 a.m.)*
Professor Alan F. Westin, Columbia University

Personal Computer Acquisition and Implementation Strategies *(Friday, 10:00-11:00 a.m.)*
Don L. Eddy, Principal, Office Futures Now, Inc.

Compatible Systems and Software for the IBM PC *(Friday, 2:00-3:30 p.m.)*
Moderator: Steve Cook, Technical Editor "PC World"
Panelists: Chris Larson, Product Marketing Manager, MSDOS, MicroSoft, Steve Flanagan, VP Software, Compaq Computer Corp.

2. Introduction to Microcomputing and its Applications

For Executives who are concerned with the selection and use of microcomputers primarily in smaller businesses, the EMCE conference highlights:

Keynote: The Personal Computer: The Mouse that Roared! *(Thurs., 9:00-10:00 a.m.)*
Lew Kornfeld, Director, Tandy Corporation

How to Buy a Personal Computer *(Thurs., 10:00-11:00 a.m.)*
Lawrence Gowan, Director, Gowan Microcomputer Training School, Boston, MA

Spread Sheet Financial Applications *(Thurs., 2:00-3:30 p.m.)*
Moderator: Hannah Bloch, Vice President MIS, Chase Manhattan Bank
Panelists: Scovel Kuhar, Mktg. Mgr., Standalone Products, VisiCorp, Russell Warner, Product Mktg. Mgr., End user Products, MicroSoft

New and Future Trends in Personal Computing *(Thurs., 3:45-5:00 p.m.)*
John C. Dvorak, Editor, "InfoWorld"

Word Processing Packages for Personal Computers *(Friday, 9:00-10:00 a.m.)*
Susan Harman, President, Transitions

DBMS on Personal Computers *(Friday, 10:00-11:00 a.m.)*
Adam Green, President, SoftwareBanc

A Look at Integrated Software Packages *(Friday, 2:00-3:30 p.m.)*
Moderator: Dan Corner, Sr. Market Analyst, International Data Corporation
Panelists: Chris Morgan, VP, Communications, Lotus Development Corp., Brian Fischer, Sr. Vice President, Context Management Corp., Ron Folk, OEM Customer Mktg. Mgr., VisiCorp

Panel: Executive Personal Computer Success *(Friday, 3:45-5:15 p.m.)*
Moderator: Alan Snyder, Partner, Lotus uthol & Horvath

3. Technological Developments in Personal Computing

For Executives who wish to keep up with changing microcomputer technologies in mass storage, business graphics, operating systems, and more, the EMCE conference highlights:

Keynote: The Future of Personal Computer Software for Business *(Thurs., 9:00-10:00 a.m.)*
Dan Fylstra, Chairman, VisiCorp

What's New in Peripherals *(Thurs., 10:00-11:00 a.m.)*
Peter Burgess, President, Burgess Management Associates

Developments in Personal Computer Business Graphics *(Thurs., 2:00-3:30 p.m.)*
Moderator: Dave Needle, Sr. Writer, "InfoWorld"

Developments in Mass Storage Capabilities *(Thurs., 3:45-5:00 p.m.)*
Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation

Utilities *(Friday, 10:00-11:00 a.m.)*
Hames Gaffner, President, LINK

Popular Programming Languages *(Friday, 10:00-11:00 a.m.)*
Gordon Eubanks, Vice President, Commercial Systems Division, Digital Research, Inc.

Operating System Selection: 8 to 16 Bit *(Friday, 2:00-3:30 p.m.)*
Moderator: Maggie Canon, Editor-in-Chief, "InfoWorld"
Panelists: Gordon Eubanks, VP-Commercial Systems, DRI, Jean Yates, President, Yates Ventures, Mark Ursino, OS Marketing Mgr., Microsoft Inc., Natalie Shuttleworth, Manager of OS Mktg., Apple Computer

Developments in Networking *(Friday, 3:45-5:15 p.m.)*
Moderator: Will Zachmann, VP, Office of Technology Assessment, International Data Corporation
Panelists: Mark Stahlman, Dir., Mktg. Development, General Instrument Corp., Art Simon, Director of Mktg., Commercial Services, Warner-Amex Cable Communications Inc.

4. Microcomputer Market Opportunities

For Entrepreneurs, Dealers, Distributors and Systems Houses, we'll offer sales and venture capital strategies you won't want to miss. Session highlights include:

Keynote: Retail Opportunities in the Personal Computer Marketplace *(Thurs., 9:00-10:00 a.m.)*
James Fiske, President, Internetworx, Inc.

Software Packaging and Distribution *(Thurs., 10:00-11:00 a.m.)*
Will Luden, Director of Marketing and Retail Communications, Micropro International

Raising Venture Capital for Software and R&D *(Thurs., 2:00-3:30 p.m.)*
Moderator: Jim Furnebus, Partner, L.F. Rothschild, Unterberg & Towbin

Legal Issues for the Retail Distributor *(Thurs., 3:45-5:00 p.m.)*
Walter Klasson, Brown, Raysman & Millstein

Market Update: Competition from Japan *(Friday, 10:00-11:00 a.m.)*
Robert C. Wood, President, Robert Chapman Wood Company

Successful Training Strategies for Vendors and End Users *(Friday, 2:00-3:30 p.m.)*
Sue Cornwall, NEC Information Systems; Stephanie Rosenbaum, President, Tec Ed

Delivering Good Maintenance, Service & Support *(Friday, 3:45-5:45 p.m.)*
John Harnett, Director of Planning and Development, TRW Customer Service Division

Scaling the Corporate Account: Problems & Pitfalls *(Friday, 9:00-10:00 a.m.)*

Special Program for Educators

Saturday, June 25
Co-sponsored by T.H.E. Journal

For Educators and Administrators, EMCE will hold a special seminar on Saturday, June 25th entitled Microcomputers in Education which includes the following sessions designed to suit the unique needs of education.

Keynote: Computer Assisted Instruction in Education *(8:30-9:30 a.m.)*
Dr. Sylvia Charp, Editor-in-Chief, T.H.E. Journal

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- 3 days of exhibitions
- Hardware/Software selection
- Micros in smaller businesses
- Financial applications
- Special program of personalized instruction
- Future trends
- And much more!

The Executive Microcomputer Conference and Exposition (EMCE) is sponsored by the Conference Management Group of CW Communications Inc., publishers of *Computerworld, InfoWorld, ISO WORLD* and *PC World*.

Computer Funding and Acquisition *(9:30-10:30 a.m.)*
Ann Cullather, Education Legislation & Technology, Washington, D.C.

Logo, An Educational Language *(10:45-11:45 a.m.)*
Richard Carter, Director, Educational Laboratories, Lesley College

Teacher Training *(1:15-2:15 p.m.)*
Kevin Dwyer, Training Director, Unicom

Administrative Applications for Educational Institutions *(2:15-3:15 p.m.)*
Patricia Carter, Computer Applications Specialist, MASBO CoOp

Educational Computing at Home *(3:30-5:00 p.m.)*
Moderator: Scott Mace, Sr. Editor, "InfoWorld"
Panelists: Ken Komoski, Executive Director, Educational Products Information Exchange Institute; Richard Robinson, President, Scholastic Inc.

Special Hands-On Workshop

Thursday, June 23 & Friday, June 24

In addition to the main conference program, EMCE will offer a two-day Executive Microcomputer Workshop for those professionals who wish to get hands-on experience with an Apple or IBM Personal Computer. The workshop will focus on four specific applications: spreadsheet analysis using VISICALC, data base management using dBase II, graphics and communications. An in-class network will be set up to demonstrate the communications capabilities of personal computers. The two-day seminar will run concurrently with the EMCE Conference program and will include admission to the exhibits and special feature sessions on Saturday, June 25.

The Executive Microcomputer Workshop will be sponsored by the *Personal Computer Learning Center of New York City* and will be held at the Center, located at 1120 Avenue of the Americas, on Thursday and Friday June 23 & 24th. **Enrollment is limited,** so please register early with your choice of hands-on using either an Apple or an IBM PC.

FREE Feature Sessions for All Saturday Attendees

FREE Special Feature Sessions for all Saturday EMCE attendees (exhibit or conference) will be held Saturday, June 25 from 9:00-1:00 p.m. The sessions will focus on professional applications for micros and starting your own home based business or office, and will also discuss the personal computer's impact on family life, kids and recreation.

1. The Home Office — Basics

Getting Started — Hardware & Where to Buy *(9:00-10:00 a.m.)*
Daniel P. Coursey, Senior Market Analyst, International Data Corp.

Software Applications — Selection & Uses *(10:00-11:00 a.m.)*
David Lamb, Sr. Research Associate, LINK

Setup & The First Six Months *(11:00 a.m.-12:00 noon)*
Paul Conover, President, Praxsys Communications

Programming Languages *(12:00 noon-1:00 p.m.)*
A. Richard Miller, Partner, Miller Microcomputer Services

2. Professional Applications

A Look at Spread Sheet Applications *(9:00-10:00 a.m.)*
Ralph Wagner, President, Microsource/Financial, Inc.

Investment Management Applications for Micro's *(10:00-11:00 a.m.)*
Jon Zonderman, Contributing Editor, "Computer Update"

On-line Data Base Systems *(11:00 a.m.-12:00 noon)*
Steven Sieck, Dir., Electronic Information Program, LINK

Word Processing Packages for Microcomputers *(12:00 noon-1:00 p.m.)*
Ronnie Marshak, Contributing Editor, "The Seybold Report"

3. Home/Family Microworld

Household Management *(9:00-10:00 a.m.)*

Micros for Organizations & Groups *(10:00-11:00 a.m.)*

Home Micro-Based Businesses *(11:00 a.m.-12:00 noon)*
A. Richard Miller, Partner, Miller Microcomputer Services

Micros: Impact on Family Life, Kids & Recreation *(12:00 noon-1:00 p.m.)*
Dan Oehlsen, Executive Producer, Children's Computer Workshop

Over 100 Professional Exhibits at EMCE

EMCE exhibits offer the latest in business-oriented hardware, software, peripherals, systems, accessories and resources from a wide selection of suppliers including companies like IBM, Digital Equipment Corporation, BASF Systems Corp., Computerland, Addison Wesley, GRID Systems, Micro Systems International, Key Software and Victor Electronics . . . to name just a few. EMCE's designed for you to see, touch and learn what you need to know about micros. **Your conference registration includes complete, 3-day exposition attendance.** Or you can sign up for the exhibits only. If you register in advance, using the form in this ad, you get two bonuses:

1. **Early admission** — only conference registrants and advanced registrants will be admitted to the hall between 11 a.m. and NOON on Thursday and Friday.
2. **$5.00 discount** on admission price.

Register for EMCE now! The Sheraton Centre in New York City is the place; June 23-25, 1983 are the dates. Exposition hours: 11-7, Thursday and Friday; 10-6, Saturday. For more information on the conference and exposition, dial 1-800-225-4698 (In Massachusetts, 617-879-0700) and ask for Louise Myerow.

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- ☐ One Day Conference Registration — $195
  - ☐ Thurs. only ☐ Friday only
- ☐ Executive Microcomputer Workshop Thurs. and Friday — $595
  Choose one: ☐ Apple ☐ IBM PC
- ☐ Micros in Education Sat. June 25 — $ 95

*Includes Saturday Special Features Programs

Conference registrants only may register by phone. Call 800-225-4698. In Mass. call collect (617-879-0700) and ask for Louise Myerow.

Registrations Cancelled later than June 15 are subject to a $50.00 service charge. Registration may be transferred at no charge.

EMCE — Sheraton Centre, New York City June 23-25, 1983 EMC3

- ☐ YES! Register me for EMCE (fill out attached conference form)
- ☐ YES! Register me for EMCE Exhibit Only (fill out attached exhibit form)
- ☐ Send Information Only.

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Send Form and Payment to: EMCE, Conference Management Group, Box 880, Framingham, MA 01701.

Exhibit Only Registration

SAVE $5 by Registering in Advance and Get Early Admission. (Only Advance registrants will be allowed into show between 11:00 a.m. and NOON on Thursday and Friday.)

- ☐ Advance *Pre-Paid 3 day exhibit* registration $20 ($25 at door)
- ☐ Advance *Pre-Paid 1 day exhibit* registration $10 ($15 at door)
  ☐ Thurs. ☐ Friday ☐ Saturday

3-Day Exhibit Registration Includes Special Feature Sessions on Saturday, June 25th from 9:00 a.m. to 1:00 p.m.

You must enclose your check or charge information. We cannot bill you or take your exhibit registration over the phone. Exhibit registration is non-refundable.

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The *Computerworld Buyer's Guide to Computer Systems* is the first in our series of market-specific directories to computer-related vendors, products and services. It will cover the market at the "core" of the computer revolution — the processor — with everything from micros to mainframes.

Complete and concise, the *Computerworld Buyer's Guide to Computer Systems* will offer detailed, all-inclusive listings and up-to-date information on the companies and products in this segment of the market. These listings will be divided into two sections: vendor profiles and product offerings. In addition, there will be articles on topics such as new technology, specific product trends, handy referral charts for representative products in particular equipment categories and issues in product selection.

In short, the *Computerworld Buyer's Guide to Computer Systems* is the *one*, easy-to-use reference source that buyers of systems hardware will refer to again and again. As an advertiser, you'll find this guide a uniquely powerful vehicle for telling your story to *Computerworld* subscribers at that crucial moment when they are actively seeking vendors.

The issue date for the *Computerworld Buyer's Guide to Computer Systems* is August 3. Advertising space close is June 17. Watch for the additional guides from *Computerworld* in 1983: *Terminals & Peripherals and Software.*

And, remember, the *Computerworld Buyer's Guides* are sent *exclusively* to the more than 111,000 *Computerworld* subscribers in the U.S. One more good reason to subscribe to *Computerworld.*

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LOS ANGELES/Jim Richardson, Bob Hubbard, Beverly Raus, *(714) 556-6480*

Northern Telecom Unveils Tools For SL-1 Communications Family

RICHARDSON, Texas — Northern Telecom, Inc. has unveiled two products for its SL-1 family of business communications systems: the Asynchronous Interface Module (AIM) and a software feature package.

AIM was designed to meet the asynchronous data communications needs of SL-1 users who do not require SL-1 electronic telephone sets. It reportedly is capable of handling data at speeds from 110 to 19.2K bit/sec and is cheaper than earlier SL-1 data modules.

While AIM is said to perform many of the functions of the SL-1 asynchronous Add-On Data Module, it can operate independently of a telephone set. Also, a 500 or 2500 telephone set may be plugged into AIM to allow voice and digital data communications to and from the SL-1 system using standard three-pair wiring. An asynchronous terminal can connect to AIM through a standard RS-232 interface.

The software features package reportedly combines the features of Northern Telecom's hotel/motel system with those of its advanced business system. Many of the features were designed to handle administrative operations and include calling features for the standard 2500 sets, dial intercom, group call, authorization code and charge account capability, direct inward system access and automatic route selection priority queueing.

Both products will be available in March and are compatible with all SL-1 models, the vendor said. AIM costs $348 each, and the software features package starts at $871. Northern Telecom is located at 1001 E. Arapaho Road, Richardson, Texas 75081.

Stat Mux Announced By Datec

CHAPEL HILL, N.C. — Datec, Inc. has announced the Datamux, a two-port statistical multiplexer for point-to-point data communications, said to support port and composite link data rates up to 9,600 bit/sec.

The link protocol (IBM's Synchronous Data Link Control) reportedly provides cyclical redundancy check 16 error detection and correction, preventing data errors from reaching either the user terminal or the host equipment.

Other features include automatic speed detection, complete diagnostics and system statistics.

The operating parameters of the Datamux may be selected from the terminal/computer equipment or via an internal option switch, the vendor said.

While the Datamux is compatible with other asynchronous modems, the unit was designed to operate with the Datec 212 Modem and Automatic Calling Unit (ACU). An Ascii-transparent mode allows users to communicate with the ACU through the Datamux.

Datamux is priced at $835, according to the vendor. Datec is located at Suite 116, 200 Eastowne Drive, Chapel Hill, N.C. 27514.

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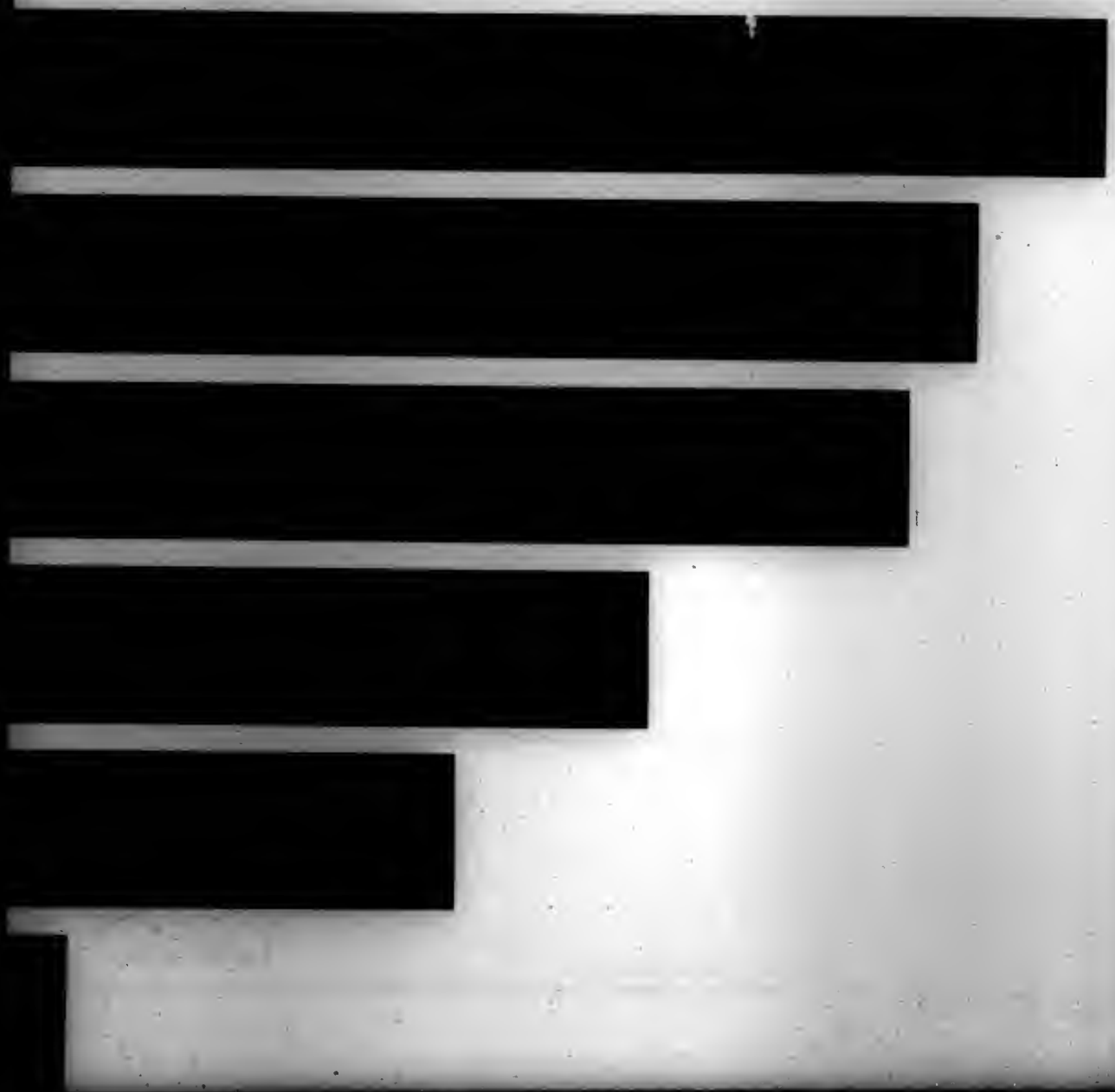


mputers' communications, through loud and clear?

Hewlett-Packard HP3000

Data Decisions, an independent research firm, surveyed users of business computer systems from the major suppliers. When the 3,042 responses were tallied, the award for Best Overall Performance in Data Communications went to Hewlett-Packard's HP 3000 computer family.

We were pleased, but not surprised. And neither were the thousands of HP customers who for years have relied on our networks.

As a pioneer in distributed processing, HP long ago took on the challenge of creating reliable data communications that were also easy to use.

Today, HP/DSN (Distributed Systems Network) is used to tie business and technical computers together in a company-wide information network. We've developed local area networks (LAN), so workstations can share data bases and peripherals. In addition, we provide links to IBM's SNA.

While we believe in a flexible approach to communications, we're also firmly committed to standards. Our systems implement X.25 packet switching, and we've just introduced DSN/PBX, which can save you a bundle on installation costs by using existing phone lines for local networks. And we worked with the IEEE committee to develop the 802.3 LAN standard that will help to make datacomm more uniform for everyone.

In everything we do, we're committed to making communications easy to install and easy to use. For instance, we can have a network up and running in just two days.

So if you want to communicate better, call your local HP sales office and ask a Business Computer Specialist about all our networking capabilities. Or write to Hewlett-Packard, Attn: Tom Rappath, Dept. 03181, 19447 Pruneridge Avenue, Cupertino, CA 95014. In Europe contact: Henk van Lammeren, Hewlett-Packard Nederland B.V., Dept. 03181, P.O. Box 529, 1180 AM Amstelveen, The Netherlands.

HEWLETT PACKARD

BD02303

Also Upgrades DEC Emulator

Persoft Extends Terminal Emulator Tools

MADISON, Wis. — Persoft, Inc. has announced an addition to its Smarterm/PC line of software terminal emulators for the IBM Personal Computer and an update to its Digital Equipment Corp. terminal emulator/file transfer package.

Smarterm/PC Model TE400-File Transfer (FT) reportedly allows an IBM Personal Computer or IBM Personal Computer XT to function as a Data General Corp. D100, D200 or D400 terminal and transfer the program and data files between the IBM Personal Computer and the host system at speeds up to 9,600 bit/sec.

TE400-FT is said to implement features that include multiple display windows with independent vertical scrolling and window erase, full character display attributes and local printer support. The TE400-FT also transmits and receives Ascii and binary files using an error-free protocol for transmission over telephone lines, the vendor said.

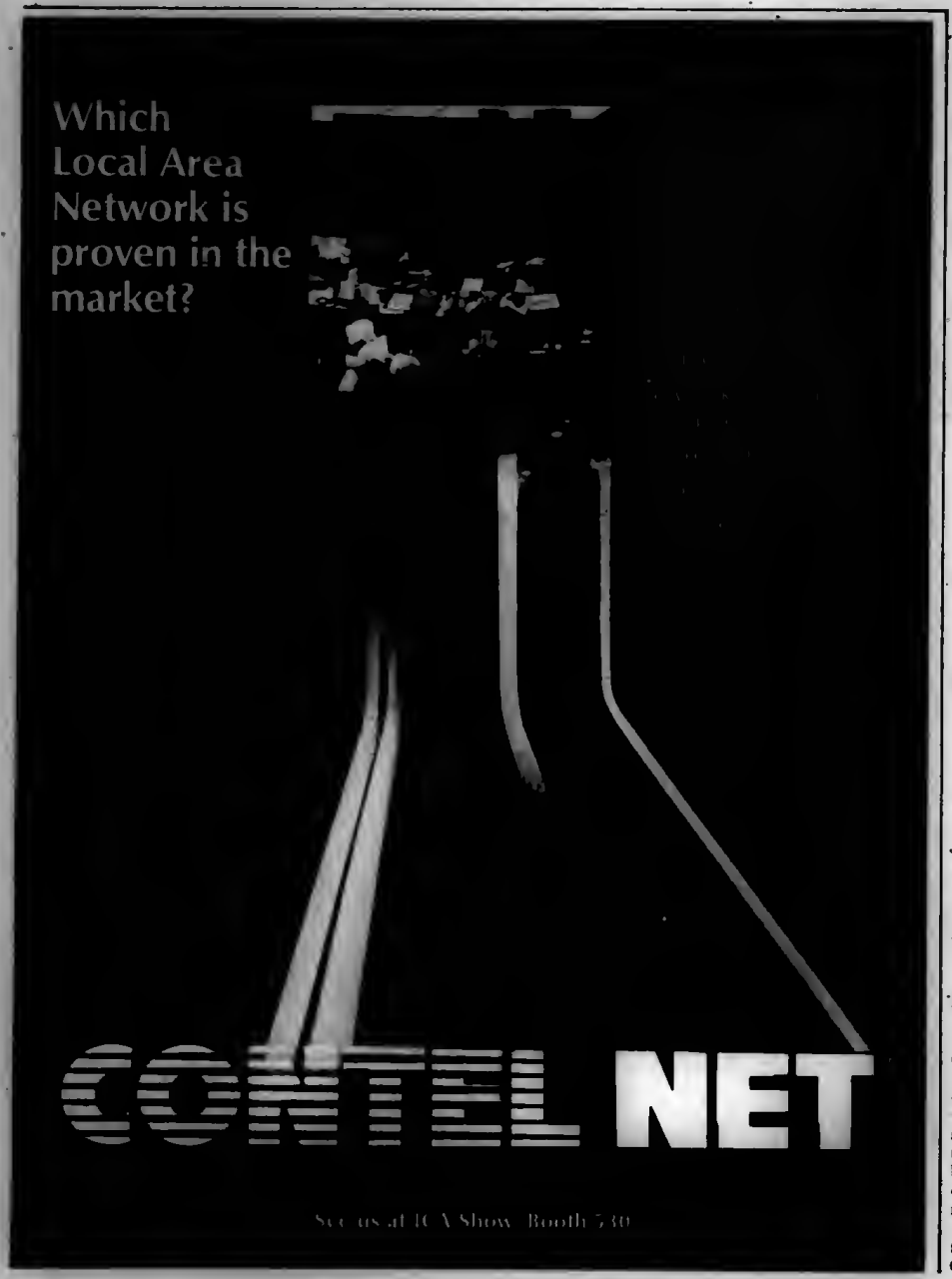
Smarterm/PC Model TE400-FT requires two diskette drives, 96K bytes of memory, an asynchronous communications adapter, a monochrome or 80-col color monitor and the IBM PC-DOS operating system, Version 1.0, 1.1 or 2.0. The list price for the TE400-FT is $125, and discounts are available for quantity purchases.

Version 2.1 of Smarterm/PC Model TE100-FT, Persoft's DEC VT100, VT101, VT102 and VT52 terminal emulator/file transfer package, includes error-free file transfer mode for Ascii and binary files and debugging trace mode.

Its extensions to the VT100 command sequence allow the user to display all 255 characters in the IBM Personal Computer character set and to access the sound generation capabilities of the IBM Personal Computer, according to a spokesman for the vendor.

The new version of Smarterm/PC Model TE100-FT is available for both the IBM Personal Computer and the IBM Personal Computer XT. It lists for $150.

Persoft is located at 2740 Ski Lane, Madison, Wis. 53713.



Series Allows Hosts, CRTs To Communicate

REDMOND, Wash. — Wall Data, Inc. has introduced the Data Communications Facilitator (DCF) series of protocol conversion systems, which are said to allow communications between incompatible computers and terminals.

The DCF series supports multiple protocols to multiple hosts on a single system, a spokesman said. The models are available in four-, eight-, 12- and 16-port configurations with redundant hardware and automatic backup. Any port may be either host or terminal. Software downloading and remote diagnostic facilities are provided.

Using DCF, Ascii terminals can access IBM 3270 Binary Synchronous Communications and IBM Systems Network Architecture/Synchronous Data Link Control hosts while concurrently supporting batch synchronous protocols and transmission to asynchronous hosts, the spokesman said. The systems can perform protocol and code conversions, flow control, device concentration and port selection.

Prices range from $5,500 to $14,500, with protocol support software priced separately at $500 to $1,000 per license from 14828 N.E. 95th St., Redmond, Wash. 98052.

Interface Ties IBM Micro, 3274

MINNEAPOLIS — Micro Link Corp. has introduced a software/hardware interface device said to allow a direct coaxial connection between an IBM Personal Computer and local IBM 3274 or remote 3274/3276 cluster control units linked under either of the IBM protocols, Binary Synchronous Communications or Systems Network Architecture/Synchronous Data Link Control.

The Coax-Link allows the IBM Personal Computer or XT to act as an IBM 3278-2 terminal, communicating with any mainframe that supports IBM 3275/3276 control units, a vendor spokesman said. The software runs under IBM's operating system, MS-DOS Version 1.1 and 2.0.

The Coax-Link package and interface adapter sells for $1,095. Micro Link can be reached through P.O. Box 113, 1850 W. Wayzata Blvd., Long Lake, Minn. 55356.

Data Decisions Offers Local Net Directory

CHERRY HILL, N.J. — Data Decisions, Inc. has released a directory of the major local-area networks on the market. It is said to cover 71 local architectures from 62 vendors.

"Local Network Architectures" is designed for users who want to configure general-purpose, multivendor systems that interconnect a variety of terminals and computers in one building or in several buildings in close proximity, a company spokesman said.

The survey is available for $25 from Data Decisions, 20 Brace Road, Cherry Hill, N.J. 08034.

3278-Compatible Terminal

Mega II Features Multiple Access

SAN DIEGO — TermTronics, Inc. has announced a generic terminal that allows access to different systems while maintaining IBM 3270 capabilities.

The Mega II includes plug-compatibility with the IBM 3278, allowing standard coaxial interface installation to existing IBM 3274 or 3276 control units, a spokesman maintained. The Mega II supports all IBM 3278 screen formats.

The terminal contains erasable programmable read-only memory. It can be converted to an Ascii, Ansi or 3270 Binary Synchronous Communications stand-alone terminal with a keystroke, the company spokesman claimed.

The Mega II has an optional 64K-byte Digital Research, Inc. CP/M-based business computer. The terminal can be selectively configured with a local print capability that allows separate addressability features, the spokesman said.

A component-level diagnostic system is automatically activated upon power-up. In the event of a chip failure, the system describes the problem and identifies the failed component, the vendor spokesman said.

Protocols are included for the following terminals: IBM 3101-20, 3275-2 and 3276-2; Digital Equipment Corp. VT100 and VT52; Applied Digital Data Systems, Inc. Regent 25; Lear Siegler, Inc. ADM-3A; and Hazeltine Corp. 1420.

The base price for the Mega II is $2,500. With the microprocessor option, the terminal costs $5,000 from 7408 Trade St., San Diego, Calif. 92121.

Excel 60 Plus Unwrapped

PENNSAUKEN, N.J. — Datamedia Corp. has announced an enhanced Digital Equipment Corp. VT131/132-compatible display terminal featuring English-prompted setup menus, 15 programmable functions keys with user-definable commands and text strings retained in 2K bytes of nonvolatile memory.

The Excel 60 Plus is a buffered 80/132-col. terminal that displays 24 lines in either mode.

Communications capabilities of the terminal include character and block transmission of asynchronous serial data and a standard bidirectional RS-232C port for serial communications.

The terminal is priced at $1,250 from the vendor at 7401 Central Highway, Pennsauken, N.J. 08109.

Modem Fits IBM Micro

NORCROSS, Ga. — Hayes Microcomputer Products, Inc. has introduced a modem paired with communications software for the IBM Personal Computer.

The Smartmodem 1200B board slides inside the IBM Personal Computer. With the addition of the Smartcom II program, the micro reportedly communicates through the modem and over telephone lines.

The Smartmodem 1200B operates at transmission speeds of 300 or 1,200 bit/sec. It is said to be functionally equivalent to the Hayes Smartmodem 1200 connected to the IBM Asynchronous Communications Adaptor. Without any auxiliary equipment, the Smartmodem 1200B automatically calls and answers calls from remote computers.

Packaged with the board modem, Smartcom II manages data transfer and allows use of a printer and disk drives while on-line with another computer.

The Smartmodem 1200B is compatible with Bell 212A-type modems communicating asynchronously and carries a two-year limited warranty.

The Smartmodem package includes the modem board, one modular telephone cable, one plastic card guide, the "Hardware Reference Manual," the Smartcom II disk and accompanying manual and costs about $599, Hayes said from 5923 Peachtree Industrial Blvd., Norcross, Ga. 30092.

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Data Bits

Color Display Terminal Acts as IBM 3279-2A Unit

SUNNYVALE, Calif. — Intersil Systems, Inc. has introduced a color display terminal said to act as an IBM 3279-2A terminal when connected to Intersil Systems' 8276 Cluster Control Unit.

The 8279-2A Color Display offers a 12-in. display screen operating in four-color or monochromatic green or yellow. It provides 24 rows by 80 char. and two additonal rows for information on communications status, host status and function key identification.

The terminal is available for $1,720 from Intersil Systems, 1275 Hammerwood Ave., Sunnyvale, Calif. 94086.

Ruggedized Data Cable Meets Defense Standards

WEST BOYLSTON, Mass. — Valtec, Inc. has announced a ruggedized data cable that is available in two- or four-fiber versions and can be used for intrabuilding or field communications.

The cable has a high pulling tension and can operate over a wide temperature range. It meets U.S. Department of Defense 1678 and 85045 standards, the vendor said.

A duplex cable costs about $2 per meter, the vendor said from 99 Hartwell St., West Boylston, Mass. 01583.

IEEE 488 Bus Extender Released by ICS Electronics

SAN JOSE, Calif. — ICS Electronics Corp. has announced an IEEE 488 bus extender using either coaxial cable or a fiber-optic link.

The Model 4887 IEEE 488 Bus Extender is said to operate under command of the local site's 488 bus controller or computer, establishing 488 buses at sites remote from the local site.

With an extender at the local site and one at a remote site, the units are said to overcome the 20-meter limit on bus length imposed by the IEEE 488-1978 bus standard.

With a coaxial cable link, the 4887 permits the bus to be extended to a remote site up to 2,000 meters from the local site. With a fiber-optic link, the remote site can be up to 1,000 meters away.

The coaxial version, 4887-C, costs $1,195, while the fiber-optic version, 4887-F, costs $1,695 from the firm at 1620 Zanker Road, San Jose, Calif. 95112.

Digital Data Loggers Said To Scan Up to 40 Channels

MULINO, Ore. — Electronic Controls Design, Inc. (ECD) has announced the DL-2010 and 2020 Digital Data Loggers with a multiplexer option said to scan up to 40 channels of analog data.

The data acquisition systems reportedly monitor, record and time document data from thermocouples, voltage or current transducers. Analog data is easily scaled to engineering units, the vendor said.

Other features include programmable logging intervals, high and low alarm and accumulating extremes held in memory.

The cost of the entire system to monitor and record 40 thermocouple inputs is $2,000. ECD is located at 13626 S. Freeman Road, Mulino, Ore. 97042.

Dial Backup Unit Designed To Prevent Line Outages

CHATSWORTH, Calif. — Micom Systems, Inc. has announced a dial backup unit designed for users that cannot allow line outages. It is offered in free-standing and card-module versions.

Dial Backer is designed for use with medium- and high-speed modems and allows for the establishment of a backup full-duplex link using two standard dial-up telephone lines when a user's leased line fails. The unit is registered for direct connection to the public telephone network.

Dial Backer is available for $600 from Micom Systems, 20151 Nordhoff St., Chatsworth, Calif. 91311.

Posilink Module Released For Users of TCS' Positran

GLENN GARDNER, N.J. — Turnkey Computer Systems, Inc. (TCS) has introduced a telecommunications module said to gather data from its Scan-Data Positran point-of-sale (POS) terminal.

The Posilink module delivers the data from the POS terminal to a Radio Shack TRS-80 microcomputer to provide restaurant management with information needed to evaluate and improve fast food performance.

Posilink is available for $10,000. Information can be obtained from TCS at RD #1, Box 50, Glen Gardner, N.J. 08826.

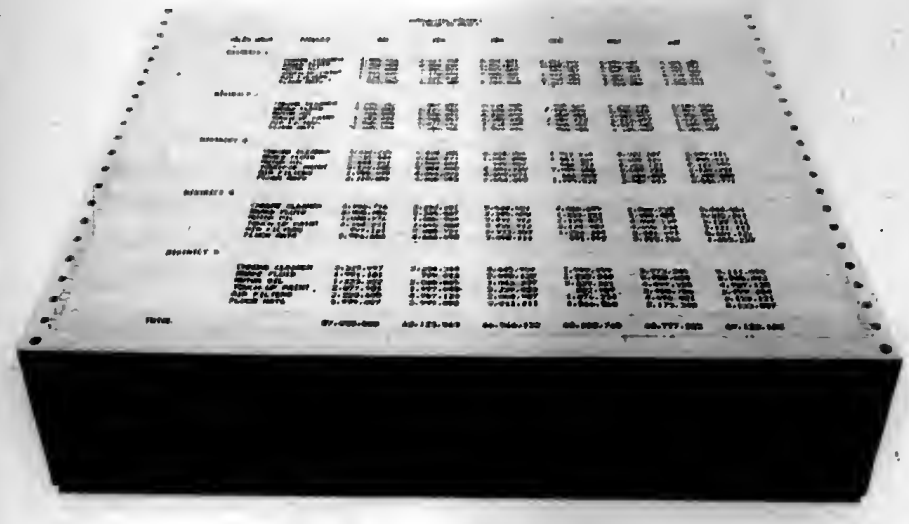
Pioneer Magnetics Unveils Link for Its Clock Writer

SANTA MONICA, Calif. — Pioneer Magnetics has introduced a digital interface said to double the read/write bandwidth of the company's disk drive Clock Writer.

The digital interface is said to allow the Clock Writer to be used with the present generation of Winchester disk drives.

The interface is priced at $1,000 from Pioneer Magnetics, 1745 Berkeley St., Santa Monica, Calif. 90404.

Management will the D.P. department



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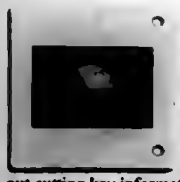

Time is too short to wade through mountains of data. Management wants you to cut the number of printouts without cutting key information.

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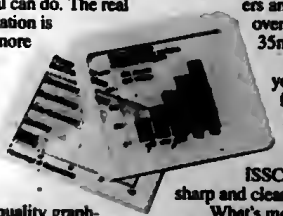

ISSCO's high-quality graphics will help users communicate with other people, too. For presentations, data can be taken directly from your computers and produced on paper, overhead transparencies or 35mm slides.

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What's more, with ISSCO's TELL-A-GRAF® software, users can quickly make professional-quality

Firm Introduces Eight-Line Mux

MINNEAPOLIS — Saturn Systems, Inc. has introduced an eight-line multiplexer said to be compatible with Digital Equipment Corp. machines.

The Saturn SZV11 is a Q-bus RS-232C asynchronous eight-line multiplexer that supports 22-bit addressing and will run all standard DEC diagnostic and operating system software. Additional features include quadruple packing density, extended bit/sec rate tables, configuration flexibility, input efficiency, I/O distribution and mode controls.

The multiplexer is available for $1,150 from Saturn Systems, 6875 Washington Ave. S., Minneapolis, Minn. 55435.

Terminal Features Touch Activation

CHAMPAIGN, Ill. — A touch-activated Ascii terminal featuring 24 lines of 80 char. has been introduced by Electro Mechanical Systems, Inc.

The Touch Information Display (TID) is said to emulate the cursor-addressing functions of Lear Siegler, Inc.'s ADM-3A terminal. An Intel Corp. 8085 microprocessor and associated memory handle both terminal and touch-panel functions in the TID.

The TID communicates with a host processor via an RS-232C interface at rates up to 19.2K bit/sec. It costs $1,400 from Electro at 801 W. Bradley, Champaign, Ill. 61820.

Pocket-Size Data Sets Aimed At Easing Local Networking

CHATSWORTH, Calif. — Micom Systems, Inc. has introduced pocket-size data sets for local networking designed to simplify local data communications.

Approximately 2 in. by 2¾ in. by ¾ in., Micom's Micro400 Local Dataset Models 430 and 431 reportedly do not need additional cables or power cords because they plug directly into a terminal or RS-232 interface and are powered by the unit they support.

Both new units are said to provide full-duplex, synchronous communications over the distances encountered on a campus or within a building and can send data over three miles when operating at 9,600 bit/sec. The Model 430 is intended for use on customer-owned lines, while the Model 431 is AT&T 43401-compatible for operation over telephone company-supplied, limited-distance private circuits.

The Model 430 Line Driver is priced at $85; the Model 431 Local Dataset is $95. Micom Systems is located at 20151 Nordhoff St., Chatsworth, Calif. 91311.

Teltone Updates Data Carrier

KIRKLAND, Wash. — Teltone Corp. has announced an enhanced version of its DCS-2 Data Carrier System. The DCS-2S is said to eliminate the need to run dedicated cable between RS-232-compatible terminals and a host computer by piggybacking full-duplex, dedicated 9,600 bit/sec data over voice traffic on single existing private branch exchange wire pairs.

Teltone has also introduced a line of statistical multiplexers. The M-860 multiplexers provide composite link speeds up to 76.8K bit/sec and can be configured with eight to 32 asynchronous input channels. Each channel is individually programmable at speeds from 50- to 9,600 bit/sec, according to a Teltone spokesman.

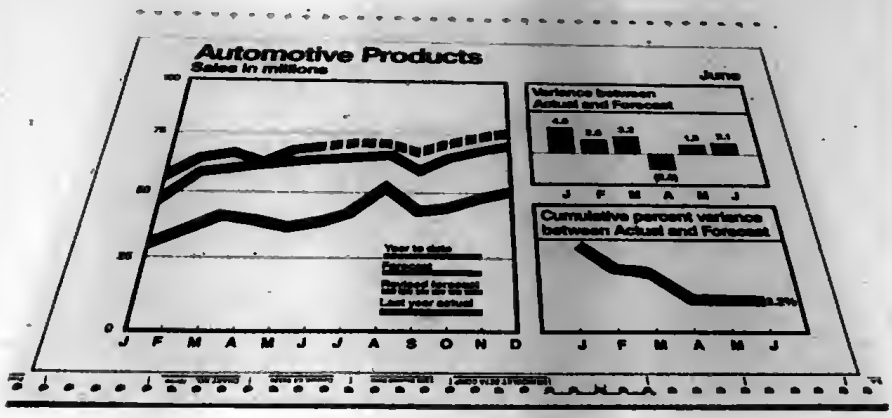
The DCS-2S is priced at $650 per channel, and the multiplexers begin at $2,400. Teltone can be reached at 10801-120th Ave. N.E., Box 657, Kirkland, Wash. 98033.

Facility Targets DG's Eclipse

WESTBORO, Mass. — Data General Corp. has unveiled an X.29 Host/Packet Assembly/Disassembly facility that provides a means to connect remote asynchronous terminals to DG's Eclipse information systems. Terminals are connected via dial-up lines to a public data network that accesses an Eclipse host through a single synchronous line instead of a dedicated communications line.

It is available as part of the Xodiac Virtual Terminal Agent at no additional charge or as a separate product for an initial license fee of $1,200 and a subsequent license charge of $720, DG said from 4400 Computer Drive, Westboro, Mass. 01581.

be happy to hear is producing less.



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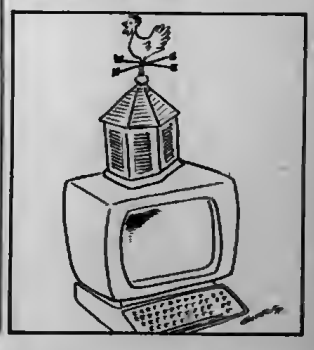

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Resource Management Tool Gets Communications Boost

LAWRENCE, Mass. — Genesys Software Systems, Inc. has announced the availability of a telecommunications and distributed data processing capability for multisite users of its Human Resource Management System software packages.

Custom-generated teleprocessing versions of the firm's Payroll Accounting, Personnel Administration and Benefits Management software will be made available to users at no extra cost.

The telecommunications software operates on Genesys' All-Screen online system with IBM 3270 or 3279 terminals and/or Personal Computers with 3270 emulation. All-Screen costs $30,000 until July 1, when the price will go up to $35,000, a spokesman said from 10 Grafton St., Lawrence, Mass. 01843.

Mux Combines 48 Data Signals

CHERRY HILL, N.J. — Infotron Systems Corp. has unveiled a multiplexer said to combine up to 48 voice and data aignals for transmission over a single telephone company T1 carrier facility.

T1 facilities offer the advantage of great bandwidth (1,544K bit/sec), according to the vendor, and have become increasingly attractive as microwave, satellite, infrared, fiber-optic and other private facilities have been added to T1 offerings.

The microprocessor-controlled T Mux accommodates up to 24 data inputs, both synchronous and asynchronous, at speeds up to 448K bit/sec. The product may be used in local point-to-point applications and in larger networks in combination with Infotron 790 and 792 concentrators.

Prices for the T Mux start at $4,800 from the firm at Cherry Hill Industrial Center, Cherry Hill, N.J. 08003.

Graphics Controller Houses Intel Series

HOUSTON — Omni Graphics Corp. has announced the Omni 1000 GDC, a high-resolution, low-power, single-board graphics display controller that houses Intel Corp.'s 8086, 8087 and 8089 microprocessors, as well as NEC Information Systems, Inc.'s 7220 graphics processor for local drawing and list processing.

Support for eight image memory planes is said to allow simultaneous display for 256 colors from a palette of 4,096 colors.

The unit, available in the third quarter of 1983, will cost under $9,000 from Omni Graphics, Suite 248, 7670 Woodway, Houston, Texas 77063.

Peritek Interface Q-Bus Compatible

OAKLAND, Calif. — A graphics and character video display interface has been unveiled by Peritek Corp.

The VRH-Q subsystem includes a dual-high card, 1024- by 1024- by one-dot graphics and a 64 by 128 alphanumeric display. The unit is designed to plug directly into Digital Equipment Corp.'s Q-bus series computers.

The VRH-Q is a combined bit-mapped dot graphics and alphanumeric video interface, which connects any Q-Bus series computer to a monochrome monitor, producing a 1024 by 1024 bit-mapped graphics image, as well as optional overlaid alphanumeric characters.

The unit has two display memories: a 64K- by 16K-bit graphics display memory and a 64K- by 16K-bit multipage alphanumeric display.

The VRH-Q sells for $2,995 from Peritek, 5550 Redwood Road, Oakland, Calif. 94619.

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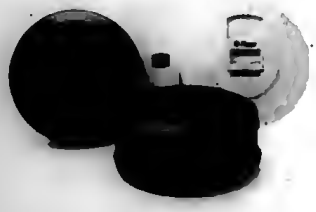

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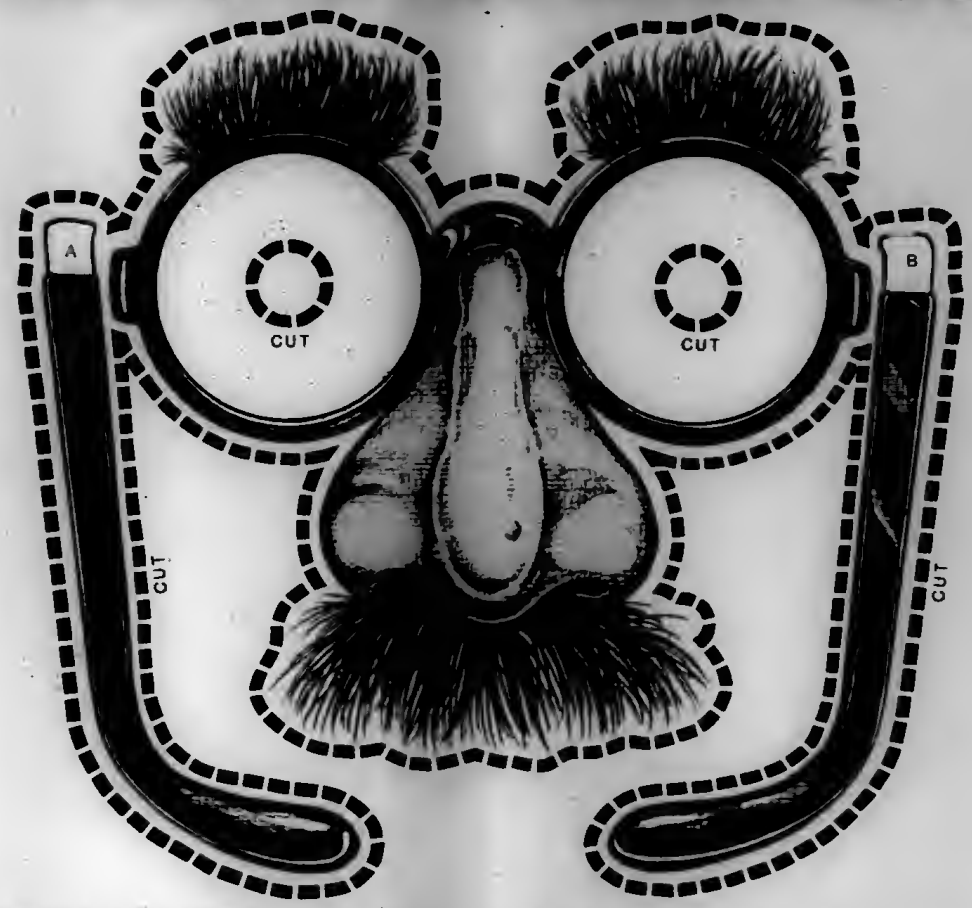
WHAT TO WEAR TO WORK IF YOU BUY THE WRONG DBMS INSTEAD OF OUR MODEL 204.



Picking the best, most productive DBMS for an OS, DOS or CMS environment requires the use of all your faculties. Because many DBMSs never live up to their promises. And sooner or later those deficiencies are bound to catch up with you. Leaving you looking for something to hide behind.

Computer Corporation of America doesn't have to put on an act to convince you. Our MODEL 204 DBMS is the only commercial DBMS ever designed from scratch for online systems. Every other DBMS was converted from batch. And that means new applications come up faster with MODEL 204. In fact, 5 to 50 times faster. And your applications and databases are much easier to maintain.

What about performance? If you end up with a DBMS that can barely carry a few million records and a dozen or so users, you won't be able to mask the fact forever. Especially if someone finds out that MODEL 204 can handle up to 513 billion records and 999 concurrent updates.

Now the advantages of MODEL 204 are available for the DOS/VS(E) and native CMS environments. Without sacrificing either performance or productivity.

In the DOS world, MODEL 204 is the only DBMS with a direct teleprocessing interface. Which saves the resources and productivity costs of a terminal monitor.

Our native CMS implementation outperforms other DBMSs because it utilizes its own I/O routines without modification to either VM or CMS.

Finally, two other things that no other DBMS can say. MODEL 204 received the highest overall rating in a recent *Datapro* survey: 3.5.[1] And it's the fastest growing system for IBM mainframes from an independent vendor.[2]

Now faced with these facts wouldn't you look silly buying anything but MODEL 204 DBMS?

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1. *Datapro*: "User Ratings of Proprietary Software-COMPLETE" November 1982 2. *Computerworld* December 20, 1982.

Other Offices: New York, Houston, Dallas, Los Angeles, San Francisco, Chicago, Philadelphia, Washington, D.C., Morristown, NJ, Stamford, CT/Representatives: Canada, U.K., Europe, Australia, Japan, Saudi Arabia.

Two-Port Mux Introduced

SUNNYVALE, Calif. — Cermetek Microelectronics, Inc. has announced a two-port statistical multiplexer said to reduce communications line costs and provide data link error correction by concentrating two serial data lines into one.

The Mux-Mate lets a user simultaneously operate a CRT terminal and receive data on a printer. An error-detecting sequence automatically requests that data errors be corrected and transmitted from the remote Mux-Mate.

The multiplexer is priced at $695 from Cermetek, 1308 Borregas Ave., Sunnyvale, Calif. 94086.

On Local-Area Nets

Copies of IEEE 802 Standard Available

LOS ANGELES — A limited number of copies of the IEEE 802 Draft Standard on Local-Area Networks is available from the Institute of Electrical and Electronics Engineers Computer Society.

Because of the size of the document and the complexity of the proposed standard, the draft has been divided into several documents based on the activities of the individual working groups.

Three parts of the draft standard are currently available: P802.2, Logical Link Control; P802.3, CSMA/CD Access Method and Physical Layer Specifications; and P802.4, the Token-Passing Bus Access Method and Physical Layer Specifications. The documents are not likely to be reprinted, the IEEE said.

Each document costs $15 for IEEE and IEEE Computer Society members and $30 for nonmembers.

More information is available from the IEEE Computer Society, Department PR, Worldway Postal Center, P.O. Box 80452, Los Angeles, Calif. 90080.

Stand-Alone System Offered, Handles Banking Applications

OMAHA, Neb. — Engineered Systems, Inc. has announced the Transaction Communication System Series 200E, a stand-alone system designed to act as a front-end processor for home banking and credit authorization applications.

The vendor claims the 200E series can be interfaced with any computer system and is available in one- to nine-port or one- to 23-port configurations. The units can accept up to 300 asynchronous frequency shift key on the network side. The remote host link can be either asynchronous or IBM 3270 Binary Synchronous Communications devices operating at up to 9,600 bit/sec. Modems are not included in the configuration, the vendor said.

Series 200E front-end processors cost from $10,000 to about $25,000, the vendor said from 14775 Grover St., Omaha, Neb. 68144.

Network Device Out From EXO

SAN MATEO, Calif. — EXO Corp. has introduced a networking product said to allow its Avalanche computer system to function as a stand-alone computer and still have shared data and resources as well as communication among users.

The Avalanche Networking Computer System has EXO's Exo/Net local-area network features built in. Users on Exo/Net are said to have a CPU at their workstation with memory and optional local disk storage and printer. The network features a baseband bus topology with carrier-sense multiple access with collision detection, a vendor spokesman said.

Avalanche microcomputers range in price from $1,295 to $7,995 from EXO, 951 Mariner's Island Blvd., San Mateo, Calif. 94404.

Terminals Gain Keyboard Phone

BEVERLY HILLS, Calif. — Voad Systems has introduced a terminal enhancement that is said to replace rotary or touch-dial telephones and allow high-speed dialing from a terminal, computer or workstation keyboard.

The Voad Keyboard Phone connects to any RS-232 port and is equipped with an RJ-11 jack for hookup to a handset, headset or speakerphone, according to a vendor spokesman.

The device is mounted beneath the work surface with adhesive strips.

In addition to high-speed dialing of an unlimited amount of telephone numbers, a Voad enhanced terminal also permits detailed call recording, a vendor spokesman said.

The Voad Keyboard Phone is available for $199.

Voad Systems is located at Suite 277, 8570 Wilshire Blvd., Beverly Hills, Calif. 90211.

Nielsen cable network product usage survey NHI Sept. 82 Subject to qualifications, available upon request

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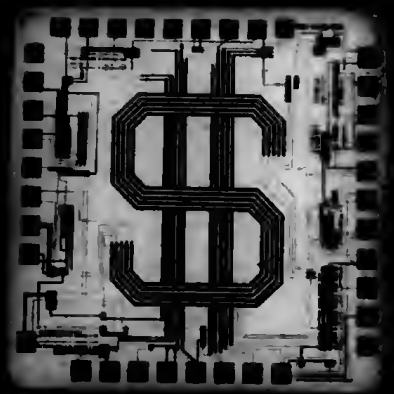

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Honeywell Series 7900 Out For Banks, Financial Firms

WALTHAM, Mass. — Honeywell, Inc. has unveiled an integrated microprocessor-based system aimed at banks and other financial institutions that ties together teller automation, platform automation, office automation and microcomputing functions using the same network.

Compatible with the company's Series 7400 teller station equipment, the Series 7900 functions either as a single workstation processor or as a cluster controller in small local-area networks supporting up to 64 intelligent workstations, the vendor said.

The system is compatible with Corvus Systems, Inc.'s Omninet local-area network, which provides users with shared access to IBM host communications. It also has IBM 3270 Binary Synchronous Communications and Systems Network Architecture/Synchronous Data Link Control-compatibility.

The 7900 consists of the Multifunction Terminal Controller, which stores 128K bytes of memory, expandable to 1M byte, two diskette drives that hold up to 320K bytes each or one 320K-byte diskette and one 10M-byte Winchester disk drive, a color or monochrome monitor, keyboard, letter-quality or draft printers, teller stations and administrative workstations, according to a vendor spokesman .

The banking system runs programs developed for Microsoft, Inc.'s MS-DOS and Digital Research, Inc.'s MP/M-86 operating systems.

Along with the 7900, Honeywell unwrapped several 7900-compatible application packages, including the Cobol-based Cash Control Application System for teller automation, Platform banker and Loan Origination for platform automation, packages for management decision support needs and a version of Metasoft Corp.'s Benchmark package for office automation applications.

Depending on the configuration, prices on the 7900 range from $18,000 to $25,000. Volume shipments are expected during the first quarter of 1984, according to the vendor.

Additional information is available from Honeywell st 200 Smith St., Waltham, Mass. 02154.

EMC Main Memory Upgrade Kit Targets VAX-11/750 Superminis

NEWTON, Mass. — EMC Corp. has put together an upgrade kit that enables users to upgrade from 2M bytes to 8M bytes the main memory of their Digital Equipment Corp. VAX-11/750 superminis. An EMC spokesman said 11/750 users can trade in their 256K-byte memory cards to EMC for credit when they upgrade.

"Many of the early VAX-11/750 users are at the 2M-byte limit and need more memory. This must have been apparent to DEC inasmuch as the VAX-11/750s that are being shipped now are all capable of going to 8M bytes," Jack Egan, EMC's DEC product manager, noted.

Once the upgrade is accomplished, users are usually left with excess ¼M-byte cards that the company is willing to buy back. However, Egan said, "the number of DEC-manufactured cards we will take in depends upon the number of new 1M-byte cards the customer needs from us."

Without trade-in, the typical price of the minimum 2M-byte upgrade kit, called the Model VX-2MB-750CA, is $11,500. This price includes 2M bytes of EMC VX-1MB memory contained on two single-hex, plug-in cards.

EMC's Upgrade Kit

Additional 1M-byte cards cost $2,450, compared with $4,900 for a similar card from DEC.

Availabillty is from stock to three weeks, EMC said from 385 Elliot St., Newton, Mass. 02164.

Works With Cartos, Unica

Datacase/5 Mini Announced

IRVINE, Calif. — The Naked Mini division of Computer Automation, Inc. has announced the Datacase/5 minicomputer. The system runs application packages developed under the vendor's Cartos or Unica operating systems.

The unit is available with 256K-bytes to 1M byte of random-access memory (RAM) and features a 370-nsec read-access time and a performance range between .7 million to 1 million instructions per second. It can accommodate up to five 5¼-in. magnetic media devices and is available in both desktop and 19-in. rack-mountable models, the vendor said.

Depending on the user's application, communication between Datacase/5 units can be handled in a number of ways. In high-speed, real-time applications, users have two options: a 64-bit parallel digital I/O card with 1/O transfer rates of up to 38K byte/sec or a 32-bit general purpose intelligent distributed 1/O cable with 1/O transfer rates up to 200K byte/sec, the vendor said.

For commercial users, RS-232 or RS-422/449 serial interfaces are available to provide transmission speeds of up to 56K byte/sec at a distance of up to 1,200 meters without a modem, the vendor said.

The Datacase/5 can support from 5M- to 608M bytes of Winchester disk storage. The system can support up to eight users simultaneously, the vendor said.

Offered to OEMs and systems integrators, a Datacase/5 system with 256K bytes of RAM, a 10M-byte Winchester disk drive, a 1M-byte floppy drive, four 1/O ports and the Cartos operating system costs $13,675, according to the vendor, located at 18651 Von Karman, Irvine, Calif. 92713.

Televideo's Teletote-1

Televideo Systems Makes Plunge Into Portable Mart With 25-Lb Unit

SUNNYVALE, Calif. — Televideo Systems, Inc. has jumped into the burgeoning portable computer market with a 25-lb unit the company claims is the first portable system with networking capabilities.

Aimed at the "mobile professional," the Teletote 1 features a Zilog, Inc. Z80A processor; a 9-in. screen that displays 24 80-char. lines; 64K bytes of random-access memory; a 368.6K-byte, 5¼-in. floppy disk drive; and two RS-232 printer/modem ports for hard copy and telephone connections. An optional second disk drive can be added to the system for $449.

Also optional is an RS-422 network port that permits the 8-bit system to be connected to the company's network for access to shared files, printers and electronic mail.

The standard Teletote 1 package comes with the Digital Research, Inc. CP/M operating system, the GSX-80 graphics extension, word processing, spreadsheet and graphics software.

According to Televideo President K. Philip Hwang, the portable system can be used as a "low-cost, entry-level machine by a student or as a second system to be used at home by a professional." Hwang said professionals can interchange the same diskette from their office computer to the portable.

Available in September, the system is priced at $1,499 from Televideo at 1170 Morse Ave., Sunnyvale, Calif. 94086.

Wang Offers Printer For VS Mini Line

LOWELL, Mass. — Wang Laboratories, Inc. has announced a high-speed band printer, the Model 5575, for use with its VS line of 16- and 32-bit minicomputers.

The Model 5575 can print 136 columns on single and multipart continuous forms at up to 1,100 line/min using a 64-char. print band. It operates at speeds up to 850 line/min using a 96-char. print band, the vendor said.

The printer was designed to ease operator interactions by including a large viewer window, easy access to the paper path and vertical and horizontal forms alignment adjustments. A built-in diagnostic display to report the status of the printer's systems and interlocks is also included.

The unit, which is housed in a sound-reducing cabinet, costs $28,500 and carries a monthly maintenance charge of $330. Customers may select any 64- or 96-char. band in lieu of a utility band. Optional print bands cost $400 each.

Wang can be reached at One Industrial Ave., Lowell, Mass. 01851.

Double-Precision Array Processor Introduced for Variety of Minis

BILLERICA, Mass. — CSP, Inc. has announced MAP-6410, a 64-bit double-precision array processor for a variety of 16- and 32-bit minicomputers.

MAP-6410 can perform iterative mathematical functions. All arithmetic operations are true floating point operations in a 64-bit hexadecimal format. This provides more than 16 decimal digits of precision.

The processor was designed for a variety of scientific and engineering applications, including linear and dynamic programming, network and load flow analysis, weather modeling, quantum mechanical and high-energy physics, optics design, econometrics, resource allocation and process control, the vendor said.

Software available for MAP-6410 is divided into three levels. The top level is the Matrix Accelerator Package, a set of single-statement calls from various linear algebra operations that automatically perform buffer setup, memory transfers, processing initiation and routing of results. This, the vendor said, enables any Fortran programmer to use MAP-6410 without prior knowledge of array processors.

The intermediate level of software is the Snap-II library and operating system. The library contains more than 300 Fortran-callable functions.

The bottom software level is an Assembly Language Development Utility that allows a user to add virtually any algorithm to the Snap-II library, the vendor said.

Functionally, MAP-6410 is made up of two parallel buses, each containing program and data memory, as well as serving independent processors for control, arithmetic and I/O, the vendor said.

MAP-6410 can operate at 5M floating point operation/sec without pipelining. It contains an internal data stack of 1,024 64-bit words. Data transfers to and from the host are performed by the Host Interface Module. For real-time I/O requirements, the unit can be equipped with a variety of digital, analog and peripheral device processors providing I/O rates up to 24M bit/sec. Up to eight direct memory access devices can be contained in a single MAP-6410 system, the vendor said.

MAP-6410 will be available July 1 and will cost from $50,000 for a basic system, including a 16-slot chassis with power supply, control processor, 64-bit-wide arithmetic processor, 128K bytes of program memory and 512K bytes of data memory.

Interfaces are available for major vendors' mini and supermini computers, including Digital Equipment Corp.'s PDP-11 and VAX series processors; Data General Corp.'s Nova, Eclipse and MV series of processors; Hewlett-Packard Co.'s 1000, 2000 and 3000 series processors; Gould, Inc.'s SEL Computer Systems Division's Concept series processors; Perkin-Elmer Corp.'s 3200 series processors; and Prime Computer, Inc.'s Series 50 processors. Interfaces for other systems can also be developed, the firm said from 40 Linnell Circle, Billerica, Mass. 01821.

Cromemco Unveils CS-3A

MOUNTAIN VIEW, Calif. — Cromemco, Inc. has extended its line of System Three general-purpose microcomputers by unwrapping a system said to offer maximum expansion capability for multiuser, multitasking applications.

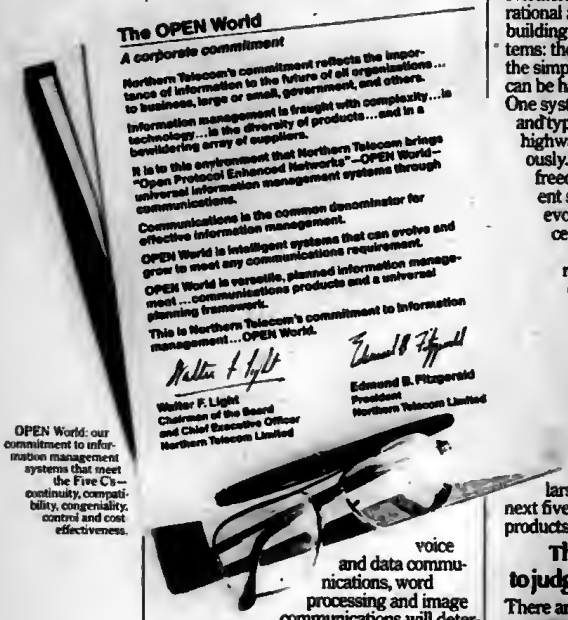
The CS-3A includes a Zilog, Inc. Z80A processor, 64K bytes of memory and two 8-in. disk drives providing a total of 2.4M bytes of disk storage. A 21-slot backplane enables users to add more processors.

Programming languages for the system include Fortran, Cobol, C, Pascal, Basic RPG-II, Lisp and Ratfor.

The basic CS-3A is priced at $6,995, and the dual-processing system costs $7,995. Cromemco can be reached through Box 7400, Mountain View, Calif. 94039.

To a world of chaos and confusion, rational approach to

Today, most organizations realize how critical it is to manage information effectively. After all, information is a key resource. So the choices you make today for data processing,



OPEN World: our commitment to information management systems that meet the Five C's—continuity, compatibility, congeniality, control and cost effectiveness.

part, are incompatible.

It is a market characterized by chaos and confusion.

OPEN World—finally, an approach that makes sense.

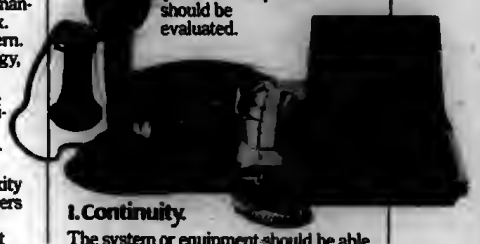
Northern Telecom has introduced a rational approach to the planning and building of information management systems: the OPEN World.* It is based on the simple concept that all information can be handled in one integrated system. One system that will allow many makes and types of equipment and transmission highways to work together harmoniously. One system that will give you freedom to choose from many different suppliers. One system that will evolve to protect against obsolescence.

The OPEN World is a planning framework embodying these concepts, and a program for the introduction of products and features to enable you to plan and build optimum information systems, designed around the key common element—communications.

We're backing the OPEN World with a research and development commitment of one billion dollars to be spent on R & D in the next five years on OPEN World systems, products and features.

The Five C's-five criteria to judge our approach. Or theirs.

There are five key criteria against which any information management system or component should be evaluated.



An example of continuity: we have evolved the telephone net work to allow yesterday's equipment to work as ef fectively as today's.

1. Continuity.

The system or equipment should be able

voice and data communications, word processing and image communications will determine, to a large extent, your future success.

But deciding on an information management system can be very complex.

Obsolescence is a constant concern. Because of the rapid pace of technology, today's innovation too often becomes yesterday's generation. To compound the problem, the needs of your organization are also constantly changing. How do you know what your requirements are going to be next year?

Also contributing to the complexity is the ever-growing number of suppliers offering a vast array of products and services. Products, which for the most

*Trademark of Northern Telecom Limited.

Emulex Unwraps DEC-Compatible Controller

COSTA MESA, Calif. — Emulex Corp. has unwrapped a Unibus-compatible controller that allows users of Digital Equipment Corp.'s PDP-11 and VAX-11/730 computers to connect high-speed, high-density disk drives.

Labeled the SC31, the device is best suited for applications involving high-speed data transfers provided by the 500M-byte drives recently introduced by several manufacturers, the company claimed.

According to Emulex, the SC31 will connect any disk drive in the 80M-byte range and up that is outfitted with an industry-standard small modular device interface to the DEC systems.

Through its proprietary bipolar design, the controller is able to support both conventional data rates of approximately 1.2M byte/sec as well as the higher data rates ranging up to 1.8M byte/sec, the company said.

The single hex board controller needs only one SPC backplane slot, which saves users backplane space and power requirements. The estimated mean-time-between-failure rate is 30,000 hours, according to a spokesman.

When used in PDP-11 applications, the SC31 emulates DEC's RH11 interface operating with RM02, RM03, RM05, RM80 or dual RP06 disk subsystems. All emulations used with the PDP-11 systems are compatible with DEC's operating systems and diagnostics.

In VAX-11/730 applications, the device emulates DEC's RH11 interface operating with RM02, RM03, RM05, RM80 or expanded RM80 disk subsystems and consists of a hardware/software package that supports large disk storage on the VAX-11/730.

Priced at $4,900, the SC31 may be combined in Emulex's mix-and-match large end-user or OEM volume purchase plan.

The unit is available this month, the vendor said from 3545 Harbor Blvd., P.O. Box 6725, Costa Mesa, Calif. 92626.

Northern Telecom brings the first information management.

to evolve to meet future needs, to accommodate future technological developments, and to provide new features. Only in this way can it be "obsolescence-proof."

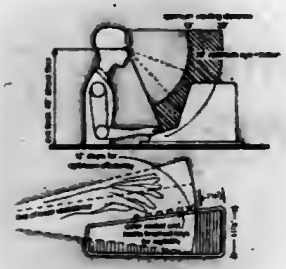
In the OPEN World, many different makes and types of equipment can work together.

2. Compatibility.

Many makes and types of equipment must be able to work together as a harmonious whole. Components and systems from different manufacturers and transmission channels from different suppliers all must be compatible.

3. Congeniality.

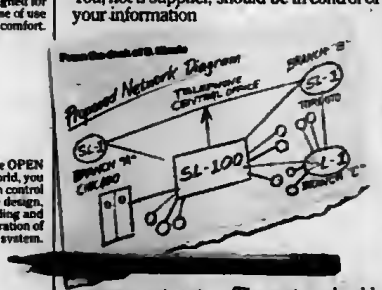
If people find equipment or systems intimidating, unattractive, or difficult to use, they simply won't use them. Even advanced technology should be attractive and simple to use.



OPEN World systems are congenial—designed for ease of use and comfort.

4. Control.

You, not a supplier, should be in control of your information

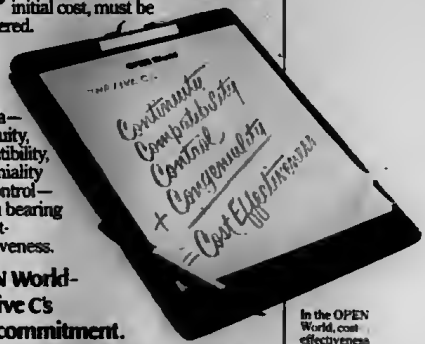


In the OPEN World, you can control the design, building and operation of your system.

management system. The system should not lock you in to a single source or limit options in the future. And the system should also provide the tools to control the cost and flow of information in your organization.

5. Cost-effectiveness.

The bottom line. Long-term financial considerations, as well as initial cost, must be considered. All of the other four criteria—continuity, compatibility, congeniality and control—have a bearing on cost-effectiveness.



In the OPEN World, cost effectiveness is the bottom line.

OPEN World—the Five C's plus commitment.

As the international leader in digital telecommunications, the technology that ties computers and communications together, Northern Telecom is in the unique position of being able to make the OPEN World a reality.

Our technological heritage allows us to meet the five criteria conclusively, as we have always done, for example, in providing equipment for the telephone network. When you place a long distance call, it may pass through many generations of equipment, all working smoothly together. Use of the telephone is simple, although much complex technology is involved. And the relative cost of using the telephone has steadily decreased, although its capabilities are constantly expanding.

In supplying telephone equipment for over 100 years, we've met all the criteria we propose for business communications.

If you'd like a brochure describing our commitments to each of these criteria, or more information about the OPEN World, write OPEN World, Northern Telecom Inc., 259 Cumberland Bend, Nashville, TN 37228.

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OPEN World. For information management, it's the best of all possible worlds.

Discovery Enhanced With Boards

PASADENA, Calif. — Action Computer Enterprise, Inc. has announced the DPC-183 and DPC-816, two board-level enhancements for its Discovery 500 and Discovery 1600 combination 8- and 16-bit microcomputer systems.

The DPC-183 is an 8-bit single-board processor designed to allow Discovery series users to operate Digital Research, Inc.'s CP/M Plus operating system.

Features of the DPC-183 include support for files up to 32M bytes in length and support for up to 512M bytes per logical disk unit. Up to 16 disks can be supported, the vendor said.

Additional features of the DPC-183 include password protection and time/date stamping, I/O device reassignment and redirection. CP/M Plus also allows the Discovery processors to be bank-switched, giving the user a larger transient program area than was previously available, the vendor said.

The DPS-183 has a dedicated Zilog, Inc. Z80 microprocessor, 64K bytes of main memory and 32K bytes of banked memory. The unit costs $1,295, the vendor said.

The vendor also announced the DPC-816, a single-board dual processor for the Discovery series.

The unit combines Intel Corp.'s 80186 16-bit microprocessor with Zilog's Z80A microprocessor on a single S-100 board.

The DPC-816 allows the use of software designed for systems running the CP/M 80 operating system.

A redesigned interprocessor communications channel is included in the DPC-816 to offer communications speeds in excess of 5M bit/sec. The unit also permits direct communication between user processors and direct memory access-type disk controllers, the vendor said.

The DPC-816 costs $1,995, the vendor said from 430 N. Halstead St., Pasadena, Calif. 91107.

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Wang Offers Subsystems For Processors

LOWELL, Mass. — Wang Laboratories, Inc. has unwrapped three 5¼-in. storage subsystems that will be packaged with the company's MVP processors and are compatible with the company's 2200 series of minicomputers. The firm also unveiled two stand-alone 5¼-in. storage devices.

The new packages, dubbed the MVP-P1, MVP-P2 and MVP-P3, are configured with an MVP processor that has eight available I/O slots, a 22C32 triple controller and the 5¼-in. storage device with both 10M bytes of fixed storage and a 320K-byte removable floppy drive.

The MVP-P1 holds 64K bytes of memory, which can be expanded to 128K bytes; the MVP-P2 stores 128K bytes of information and can be expanded to hold 256K bytes; and the MVP-P3 standard configuration holds 256K bytes of storage.

According to the company, the new systems will be targeted toward applications in the high-end microcomputer marketplace where fast data processing is required.

Expected to be available this summer, the MVP-P1 costs $7,525, the MVP-P2 lists for $8,725 and the MVP-P3 is priced at $11,125. Two stand-alone drive packages, one made up of 10M-byte and 320K-byte floppy drives costing $3,000 and the other consisting of dual 10M-byte Winchester drives and priced at $4,000, are also expected to be released this summer.

Further information on the drives can be obtained by contacting the company at One Industrial Ave., Lowell, Mass. 01851.

Amdel Unwraps 3-In. Disk Drive

ELK GROVE VILLAGE, Ill. — Amdel Corp. has announced the Amdisk-1, said to be a compact 3-in. microfloppy disk drive system with up to 286K bytes of formatted storage capacity.

The recording format, data transfer rate and disk rotation speed are compatible with Apple Computer, Inc. Apple II standard 5¼-in. drives.

The single-sided, double-density drive is housed in a compact case measuring 3.74-in. by 1.77-in. by 6.02-in. and is interfaced via a 20-pin flat cable connector.

An add-on to the primary Apple II disk drive, the Amdisk-1 costs $299, Amdek said from 2201 Lively Blvd., Elk Grove Village, Ill. 60007.

Runs Under Pick Operating System

Pertec System 4200 Out With 'System Builder'

IRVINE, Calif. — Pertec Computer Corp. has announced its 5ystem 4200 family of business computers, with an application generator called the 5ystem Builder and the Pick operating system from Pick & Associates, Inc.

The 10-MHz Motorola, Inc. 68000-based 5ystem 4200 product line offers a desktop or floor cabinet system that supports from one to 35 terminals and runs under the Pick operating system.

The virtual memory-based, multiuser Pick operating system reportedly supports a variety of relational data base management capabilities, including an English-like query language, a text editor and word processor.

5ystem Builder reportedly is a block-by-block construction tool designed to enable end users to build their own application software programs. Even after the framework of programs is defined, System Builder facilitates modifications because a relational data base is created, as opposed to coded, a vendor spokesman maintained.

The software includes menus, prompts and help facilities that go through several levels, according to the spokesman.

The basic price range for the System 4200 begins under $15,000, including the Pick operating system and the System Builder application generator.

More information on the 5ystem 4200 is available from Pertec at 17112 Armstrong Ave., Irvine, Calif. 92714.

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System Supports Three Stations

AUSTIN, Texas — Challenge Systems, Inc. has announced a multiuser small business system capable of supporting up to three workstations.

The CS1000 is a multitasking system built around dual 8-bit microprocessors, the vendor explained. It reportedly features up to 30M bytes of hard disk storage, up to 384K bytes of random-access memory, Digital Research, Inc.'s CP/M and MP/M operating systems and print and keyboard buffers, according to the vendor.

This system is priced from $7,600 to $14,600. Further details are available from Challenge Systems at Suite D-1, 10317 Lake Creek Pkwy., Austin, Texas 78750.

Compatible With Its Megamini

PE Introduces Tape Drive Family

OCEANPORT, N.J. — Perkin-Elmer Corp. has unwrapped a line of magnetic tape drives compatible with its Megamini line of 32-bit computers ranging in capacity from 300M bytes to 1.2G bytes.

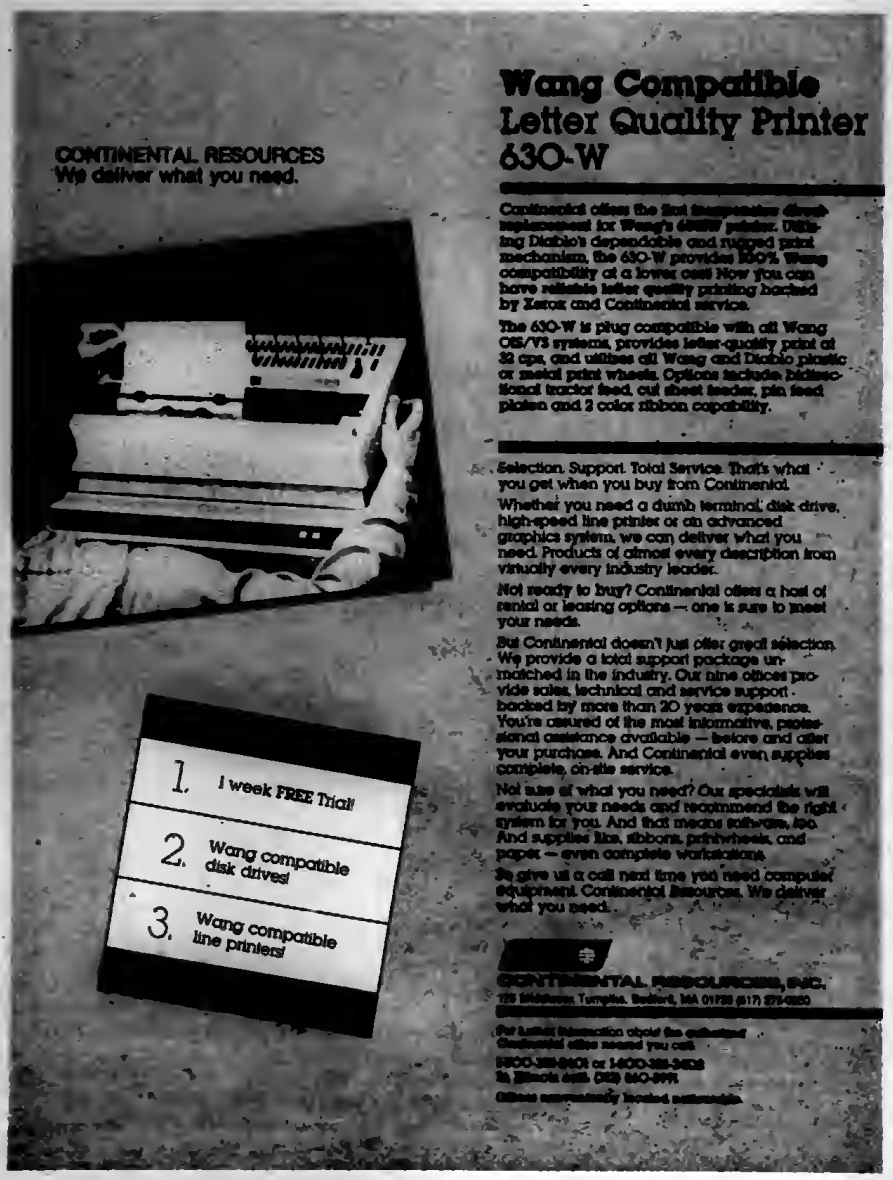
Using Winchester technology, the series consists of the MSM300F, MSM600F and MSM1200F. The MSM300F serves as the building block for both the MSM600F, two drives holding 300M bytes each, and the MSM1200F, four drives storing 300M bytes each.

A single MSM300F or a combination of up to four drives can be mounted in a single 56-in.-high cabinet or in any Series 3200 cabinet. The new disks are also offered without cabinets, providing users with a number of options for mounting them. Each of the MSM300F modules operates as an independent device in the multidrive configuration, a spokesman said.

All three units are compatible with the company's Intelligent Disk Controller which contains microprocessor-based diagnostics that provide power-up confidence testing and self-test features, the vendor pointed out.

A single MSM300F drive and controller costs $24,000; an MSM600F with two drives and controller is priced at $39,000; and the MSM1200F with four drives and controller lists for $71,000.

More information about the disk drives can be obtained by contacting the vendor at 2 Crescent Place, Oceanport, N.J. 07757.



Cadtec Unveils Design System For Big Projects

SAN JOSE, Calif. — Cadtec Corp. has announced an engineering design and project management system intended for large team-oriented design projects.

The Cadtec Series 8000 Design System is a hardware/software turnkey system that reportedly integrates Cadtec's Model 8200 interactive graphics workstations, the vendor's Model 8500 graphics office stations, and extensive system software and application tools with a Digital Equipment Corp. VAX-11 minicomputer.

The heart of the system is Cadtec's Cord Data System, a relational data base system with an object-oriented interface. The system also comes equipped with the DEC View User Interface System, a menu-driven and Help-based environment.

A typical installation of the Cadtec Series 8000 Design System to support 10 engineers averages about $50,000 per user, the vendor said. Further details may be obtained from Cadtec at 2355 Oakland Road, San Jose, Calif. 95131.

Disk Cleaner Announced

HAUPPAUGE, N.Y. — Chemtronics, Inc. has developed a magnetic head/disk cleaner that reportedly removes accumulated oxides, smoke, film, dust and oils from in and around magnetic heads, disks, drives and similar devices.

Available as an aerosol spray and a liquid, the Chemtronics Magnetic Tape Head/Disk Cleaner can be used on plastics, rubber, elastomers and film. The nonflammable substance is best suited for cleaning cassettes, reel-to-reel, audio and video systems as well as magnetic disk memory systems, dictating and telephone answering equipment. The company said it is safe enough to be sprayed while disks are running.

The noncontact cleaner can be used by technicians on-site, according to the manufacturer. Continued use of the fluid significantly reduces head wear, extends tape life, improves frequency responses and eliminates downtime due to dirty heads and disks, the vendor said.

Ingredients include a blend of Freon TF and isopropyl alcohol with less than 3% nontoxic carbon dioxide propellant.

Price of an 8-oz aerosol can is $3.15, with the 24-oz size costing $5.98, the vendor said from 681 Old Willets Path, Hauppauge, N.Y. 11788.

DEC RD51 Drive Targets Professional, Micro/PDP-11

MAYNARD, Mass. — Digital Equipment Corp. has announced the RD51, a 5¼-in., 10M-byte Winchester disk drive. The unit was designed for DEC's Professional 350 microcomputer and Micro/PDP-11 processor used by OEMs and system integrators.

Designed for use in both office and industrial environments, the RD51 offers about 10 times the storage capacity of an average 5¼-in. floppy disk drive. The unit's disk media offer 345 track/in. with a density of 9,074 bit/in. The RD51 has a peak data transfer rate of 5M bit/sec, DEC said.

The RD51 offers an average access time of 85 msec and is organized with 1,224 tracks of 16 sectors each. The drive has two data platters and four data surfaces, the vendor said.

The RD51 costs $1,695. The unit is also available as part of a complete subsystem, in which case the price varies depending on the configuration. For example, the RD51 with controller, designed to operate with the Micro/PDP-11, costs $2,985.

More information can be obtained from DEC in Maynard, Mass. 01754.

Seequa Offers Portable Micro Compatible With CP/M, PC DOS

ANNAPOLIS, Md. — Seequa Computer Corp. has announced the Chameleon Plus, a portable microcomputer compatible with Digital Research, Inc.'s CP/M and IBM's PC DOS operating systems.

The Chameleon Plus features 256K bytes of random-access memory and two double-sided disk drives. The unit offers about twice the memory and storage capacity of the firm's earlier Chameleon micro, the vendor said.

The double-sided disk drives offer 320K bytes of storage when used with the CP/M and PC DOS Release 1.1 operating systems. When used with PC DOS Release 2.0, the drives can offer 360K bytes of storage per disk, the vendor said.

The Chameleon Plus costs $2,895, the vendor said.

The vendor also announced it is offering users of a standard Chameleon micro, with 128K bytes of random-access memory and two single-sided disk drives, an opportunity to upgrade their systems to use double-sided disk drives. The upgrade costs $495 per disk drive, and the user must trade in the old drive, the vendor said.

Seequa Computer is located at 209 West St., Annapolis, Md. 21401.

Retrieval System DEC-Compatible

RAMSEY, N.J. — The Micrographics Division of Minolta Corp. has announced Mincar, a computer-assisted retrieval system that is software-compatible with Digital Equipment Corp.'s VAX-11, PDP-11 and Rainbow series of computers.

The Mincar system allows for both data entry and automatic retrieval of data using Minolta's RP 505 plain-paper reader/printer. In addition, Mincar can reportedly communicate with office automation systems, such as DEC's All-In-One package, as well as with other word processing and electronic mail systems.

The Mincar system includes specialized software developed for Minolta by Florida Computer, Inc. A complete system, including a PDP-11/23 processor, one CRT terminal, one RP 505 and the Mincar software costs $45,000, from 101 Williams Drive, Ramsey, N.J. 07446.

Peritek Card Out for Q-Bus

OAKLAND, Calif. — Peritek Corp. has announced a dual-height card for users of Digital Equipment Corp. Q-bus systems. The card offers 256 colors for graphics displays.

Called the Model VCH-Q, the unit provides 512- by 512-pixel resolution for use in eight-bit color applications. The dual-height module plugs directly into the Q-bus and contains all the necessary circuitry to connect Q-bus processors with Peritek color or monochrome CRT monitors or a standard red, green and blue monitor. From a palette of 16 million colors, 256 colors or gray scale tones can be put on the screen at one time.

The VCH-Q contains two memories, a 128K by 16-bit graphics image random-access memory (RAM) and a 256-word by 24-bit word color lookup RAM. In the graphics memory, each 16-bit word represents two eight-bit pixels. The eight-bit pixel value associated with each dot acts as an index into the color lookup RAM.

Access to the VCH-Q's graphics color map memories is through the I/O port of system memory. Under program control, users can select alternate color map settings on a frame-by-frame basis so that special effects and animation are possible.

The VCH-Q costs $2,995, Peritek said from 5550 Redwood Road, Oakland, Calif. 94619.

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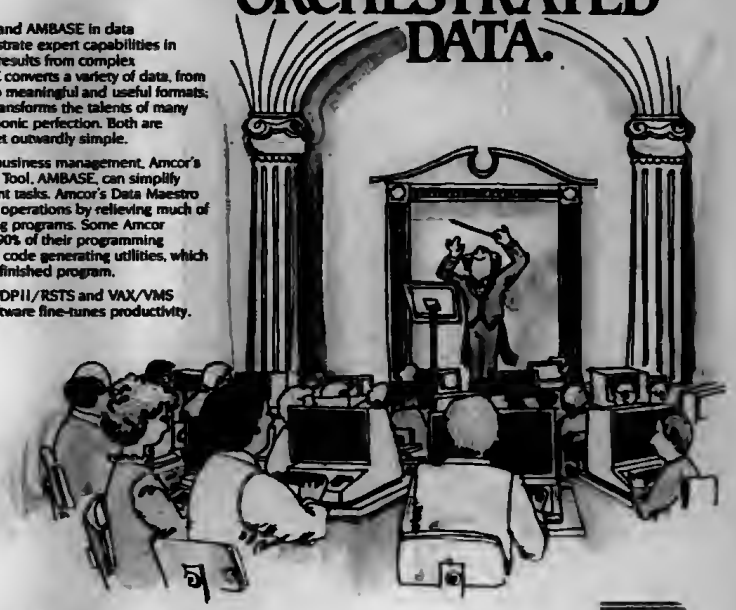

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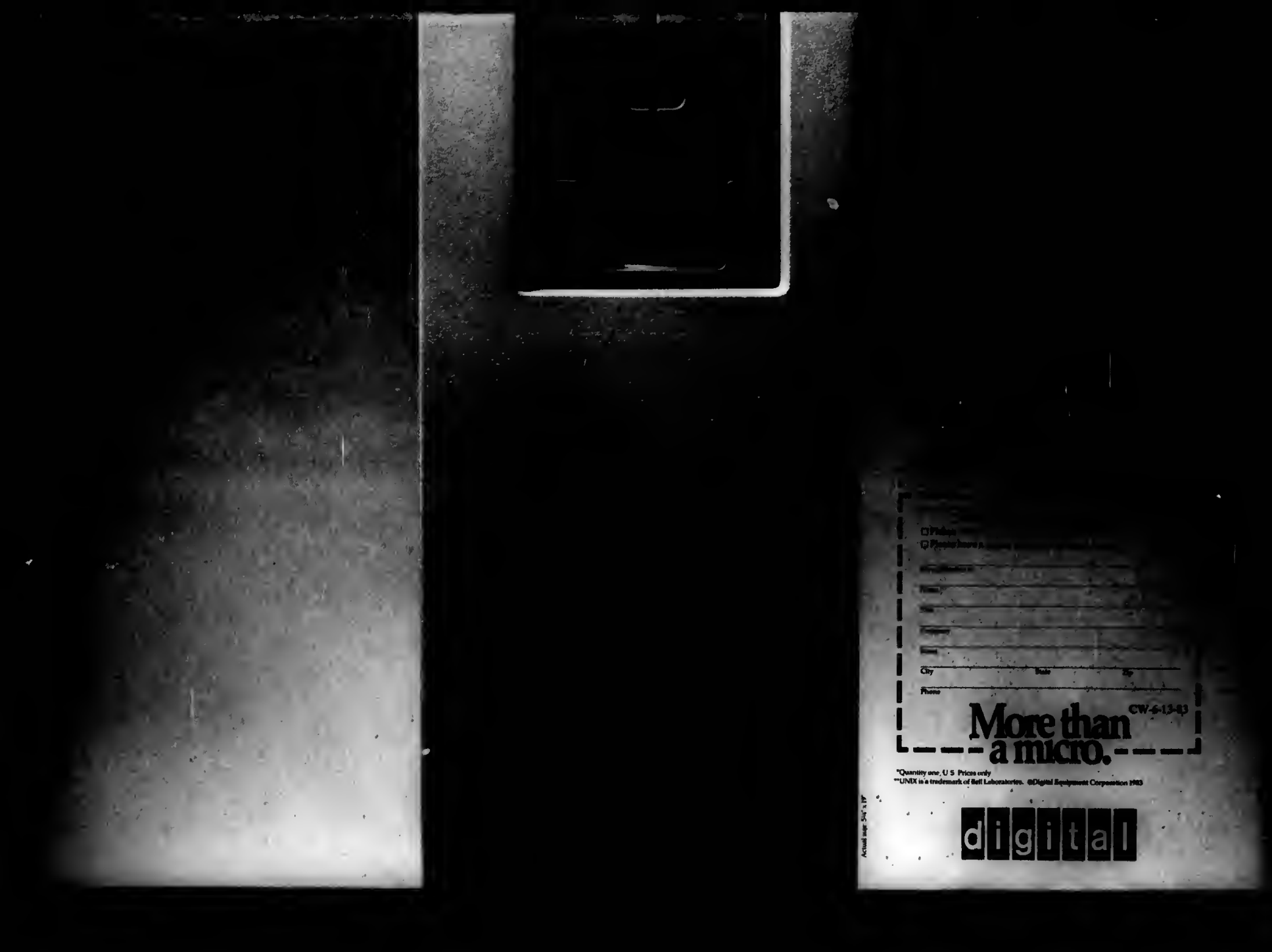
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Desktop Business System Based on Intel 80186

BELLEVUE, Wash. — CMC International has unveiled the Supersystem II Model 8/16, a desktop business computer designed to run in either an 8- or 16-bit environment.

The Model 8/16 is based on Intel Corp.'s 80186 microprocessor and is available in several versions, with storage capacities ranging from 700K bytes to 52M bytes. The system reportedly offers full Digital Research, Inc. CP/M compatibility with 8- or 16-bit software and supports a variety of programming languages, including Microsoft, Inc. products, C, Basic II, Fortran, Cobol, Pascal and PL/I-80.

The Model 8/16 is available in two basic designs: the 5ystem 1016 and the 5ystem 1516. Both are said to offer compatibility with CMC International's 8-bit, Zilog, Inc. Z80A-based product line in either stand-alone or networked systems, run under the CP/M 86 operating system and offer three separate ports — a parallel printer port, an RS-232 communications port and an optional synchronous port.

The 5ystem 1016 Model 1 features two 5¼-in. floppy disk drives with 700K bytes of storage. The Model II offers the same drives, but has a 1.6M-byte storage capacity, the vendor said.

The 5ystem 1516 comes in three versions. The Model 1 features one 5¼-in. hard disk with 5M bytes of formatted disk storage and a 5¼-in. floppy disk with 820K bytes of additional storage. The higher capacity Model II offers instead one 5¼-in. hard disk with 10M bytes of formatted disk storage in addition to the floppy disk. The Model III offers users 20M bytes of formatted storage on a 5¼-in. hard disk and the same additional capacity as the other two versions.

The systems are available in production quantity shipments, priced from $3,995 at the low end to $7,995 at the high end, the vendor said from 1720 130th Ave. N.E., Bellevue, Wash. 98005.

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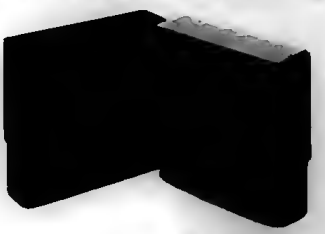

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Diskstor-M4 Features 128K RAM

WALTHAM, Mass. — Comark Corp. has introduced a computer system said to contain 128K bytes of random-access memory with parity, an RS-232 serial port, a 24-bit parallel port, a 9511A floating-point processor, nine interrupt levels, three 16-bit interval counters and two SBX connectors.

Diskstor-M4 is also said to contain a 1M-byte floppy and an 18M-byte Winchester for mass storage. The system comes with documentation and a choice of Microsoft, Inc.'s MS-DOS or Digital Research, Inc.'a CP/M 86 operating system.

Diskstor-M4 is priced at $10,630. More information is available from the vendor at 257 Crescent St., Waltham, Mass. 02154.

Series Serves Power Lines

GREENVILLE, Pa. — Westinghouse Electric Corp. has introduced a series of portable power line conditioners, said to help protect small computers and sensitive electronic equipment from surges or drops in voltage.

The Westinghouse Mini-Regulating Center Power Line Conditioner reportedly regulates incoming voltage and reduces electrical line noise, assuring clean, stable power flow.

The device aids computers, word processors, electronic cash registers and other equipment requiring steady ac power flow, according to a company apokesman.

The portable devices are available in three versions: .250 kVA ($275), .500 kVA ($381) and 1.000 kVA ($563).

More information is available from Westinghouse Dry-Type Distribution Transformer Division, Reynolds Industrial Park, Greenville, Pa. 16125.

MDB DMA Module Ties DG Nova, Eclipse to DEC

ORANGE, Calif. — MDB Systems, Inc. has introduced a high-speed data channel direct-memory access (DMA) module said to be interface- and function-compatible to the Digital Equipment Corp. or MDB DR11-W.

Developed for Data General Corp.'s Nova and Eclipse computers, the MDB-Data Channel Interface Board (DCHIB) was designed for use with high-speed data graphics terminals and other peripherals and can be used to link DG computers with DEC PDP-11, VAX-11 and LSI-11 processors equipped with either an MDB or DEC DR11-W.

Two DG computers can also be linked together when up to 50 feet apart if two of these modules are used (one in each computer). Sixteen bits of parallel data may be transferred to and from the computer via the computer's data channel (DMA) or under program control.

A key feature is said to be the edge-mounted, switch-selectable DMA throttle timer for data transfer rates of 250K, 111K, 30K, 17K and 12K words. The throttle timer adds selected delays to the data transfer rate for situations where maximum (250K words) transfer rates might degrade computer system performance.

A second board, the MDB-DCHIB-LLO contains differential (RS-422) drivers and receivers, in addition to the conventional transistor-transistor logic circuitry. The board reportedly can transfer and receive data over distances up to 1,000 ft to a computer or terminal that has corresponding circuitry.

It can operate with MDB DR11-Ws for DEC Unibus and Q-bus computers, which also utilize MDB's WLLA long-line adapter, or with a second MDB-DCHIB-LLO in a second DG computer.

The MDB-DCHIB costs $1,975 each; the MDB-DCHIB-LLO is priced at $2,670 in single quantities from MDB Systems, 1995 N. Batavia St., Orange, Calif. 92665.

Controller Links Printers, DEC

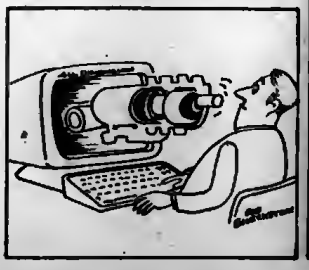
ORANGE, Calif. — MDB Systems, Inc. has announced line printer controllers that connect printers made by Data Printer Corp. to Digital Equipment Corp.'s PDP-11 and VAX-11 computers.

The line printer controllers reportedly have MDB's Printest and Loop Back features on board as well as transistor-transistor logic (TTL) and optional AT&T Long Lines capabilities, similar to those contained in MDB controllers for Centronics Data Computer Corp. and Dataproducts, Inc. printers.

The Long Lines option allows the user to locate the printer up to 3,000 ft from the computer.

The line printer controller, designated as MDB-LP11-A, is priced at $1,250, which includes a 25-ft interconnection cable. The controller with Long Lines option, designated the MDB-LP11-A/LLO, is priced at $1,450 and is supplied with a 15-ft cable.

MDB Systems is located at 1995 N. Batavia St., Orange, Calif. 92665.



Hard Disk Fits Tektronix Units

BEAVERTON, Ore. — Tektronix, Inc. has announced a high-performance large-capacity hard disk intended for its 4100 series terminals.

With the 4926 10M-byte hard disk, users of the terminals, which can be programmed locally, now have direct local access to large capacity mass storage, thereby increasing applications flexibility and efficiency as well as reducing host dependence, the vendor claimed. The disk utilizes 5¼-in. Winchester technology.

The 4926 is priced at $4,200 from Tektronix, P.O. Box 500, Beaverton, Ore. 97077.

Printers Fit System/34, 38

MENLO PARK, Calif. — BDS Corp. has introduced the LQ-55 and the LQ-35 letter-quality daisywheel printers aimed at the IBM System/34 and System/38 plug-compatible marketplace.

These products perform at rates of 55 char./sec and 35 char./sec, respectively. They feature over 100 font styles in both plastic and metal print wheels, column and status display, a print wheel mechanism that rotates 90 degrees and a removable platen to enable cleaning the paper path.

In single quantities, the LQ-55 costs $3,900, and the LQ-35 is $3,200. Further details are available from BDS at 1120 Crane St., Menlo Park, Calif.

Aimed at OEMs, Systems Integrators

Memorex Unveils Three 5¼-In. Disk Drives

SANTA CLARA, Calif. — Memorex Corp. has announced the first three members of its 500 family of 5¼-in. disk drives. The drives are aimed principally at OEMs and systems integrators.

Called Models 512, 513 and 514, the units offer capacities of 30- 50- and 70M bytes, respectively, and feature an average access time of 25 msec. Track-to-track access time is 3 msec, and the maximum access time is 45 msec. All models support an industry-standard 5¼-in. interface, bezel- size and mounting points, the vendor said.

All three drives, which are collectively called the 510 series, have built-in, self-test capabilities plus a diagnostic port. The diagnostic port also allows access to the drives' error accumulators to provide status reporting, a spokesman for the vendor said.

The 510 series uses plated media, a linear voice coil actuator and a closed- loop servo system. Each drive contains five on-board microprocessors that handle normal drive functions and provide adaptive control to monitor continuously critical parameters throughout the lifetime of the drive. This approach allows the drive to make dynamic adjustments to compensate for long-term tolerance changes, the vendor said.

All three models support regular and buffered step modes on a 5¼-in. Winchester disk drive interface. By using a standard interface, the vendor spokesman said, the interface time is cut to less than 40 msec to transfer any seek command to the drive.

In addition, the drives can be operated in a serially encoded cylinder address mode, which can reduce controller overhead by 50 msec per seek, the vendor said.

When purchased in quantities of 1,000, the 512 30M-byte drive costs $1,100; the 50M-byte Model 513 costs $1,400; and the 70M-byte Model 514 costs $1,700. Information is available from Memorex at San Tomas and Central Expwys., Santa Clara, Calif. 95052.

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OCR Reads 250 Page/Hour, Eight Typefaces

SAN JOSE, Calif. — Dest Corp. has announced a desktop optical character recognition (OCR) page reader designed to reduce the time required to transfer typewritten documents into word processors, computer systems, communications systems and typesetters.

Called the Model 203 Turbofont, the unit is an addition to the firm's Workless Station Series 200 data entry terminals. The Model 203 Turbofont can read up to 250 page/hour, or about one page every 15 seconds, the vendor said.

The Model 203 Turbofont was designed for high-production office environments such as law firms, publishers and government agencies where many externally generated documents must be entered. The page reader scans a typewritten page and converts the text into electronic signals which are transmitted into a word processor's disk memory, the vendor said.

The Model 203 Turbofont reads copies as well as original documents. Documents can be typed in any of eight common typefaces, including Courier 10 and 12, Letter Gothic, Prestige Elite, OCR-A, OCR-B, Pica and Elite. The unit can recognize different typefaces on the same page without operator prompting, the vendor said.

System interfaces are available to convert automatically the entered document to include the codes and formatting commands required by office systems. Format interfaces are currently available for IBM, Xerox Corp., Wang Laboratories, Inc. and other vendors' systems, the vendor said.

The Model 203 Turbofont costs $9,995. Optional format interfaces cost $1,495. In addition to the standard Courier 10 typeface, users may select up to seven other typeface recognition programs at $495 each, the vendor said from 2380 Bering Drive, San Jose, Calif. 95131.

RLS Announces CAD System

GREENSBURG, Pa. — Rotating Logic Systems (RLS) has announced the RLS-1000 computer-aided design (CAD) system designed for small to medium-size electronics manufacturing facilities.

The RSL-1000 reportedly routes printed circuit boards, produces schematics, maintains parts lists, checks for possible design errors and produces camera-ready artwork.

The system includes a desktop microprocessor-based system with typewriter-style keyboard, joystick cursor control, floppy or Winchester disk drives, digital plotter and dot matrix printer, a vendor spokeswoman said. The design software has been enhanced for ease of operation and includes a macro device library, the spokeswoman claimed.

The RLS-1000 is priced at $15,000, the spokeswoman said. RLS is located at Highland & White St., Greensburg, Pa. 15601.

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Compatible Subsystem Also Unveiled

Tape Drive Out for IBM Micro

NATICK, Mass. — Alloy Computer Products, Inc. has announced a nine-track tape drive that enables IBM's Personal Computer to transfer data back and forth with mainframes. The company also introduced a cartridge tape subsystem compatible with the IBM Personal Computer that serves both as a medium for data storage and retrieval as well as a site-by-site Winchester disk backup.

Called the ITS-PC, the nine-track tape, which is available with or without an integrated Cipher Data Products, Inc. tape drive, provides 42M bytes of working or backup storage and has a disk-tape transfer rate of 1M byte/min. The device supports 1,600 bit/in. tapes with user-specified formats from 128K to 9K byte/block, according to the company.

The cartridge tape subsystem, dubbed the PC-Backup, is a four-track 6,400 bit/in. unit that holds 13.4M bytes of data/450-ft tape and 16.5M bytes on the company's 555 cartridge.

Both the ITS-PC and PC-Backup come standard with PC-TIP software. The TIP package controls reading, writing and dumping operations and supplies utilities that allow users to customize their own drive operations, a vendor spokesman noted.

The ITS-PC and PC-Backup subsystems cost $6,995 and $1,995, respectively, Alloy Computer said from 12 Mercer Road, Natick, Mass. 01760.

Memory Boards Added To Datricom's STD Series

LAKE OSWEGO, Ore. — Datricom Corp. has added the Universal Memory Board and RTX Clock and Memory Support Board to its line of products for systems designed around the STD-Bus.

Combined, the two newly announced modules form a fail-safe memory subsystem. When used separately, the products can increase systems capabilities, the vendor said.

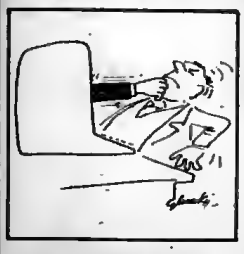
The MS-128 Universal Memory Board offers a variety of memory alternatives. It allows the use of memory devices that conform to the Joint Engineering Evaluation Committee standards. These include: random-access memory, read-oniy memory, erasable programmable read-oniy memory and electrically erasable programmable read-only memory in chip densities ranging from 2K bytes to 32K bytes. Total onboard memory capacity is 128K bytes, the vendor said.

The MS-128 costs $195, according to Datricom.

The RTX Clock and Memory Support board, when used independently, offers power-fail detect, battery backup, write-protect and temperature sense input, as well as a time-of-day clock and calendar. When used in conjunction with the MS-128, the unit provides control circuitry for the MS-128 socket-selectable, write-protect feature. This reportedly guarantees uninterrupted power to selected memory devices.

The unit senses both transient low power and complete power outage conditions and automatically switches to battery operation.

The board costs $295, the vendor said from 155 B. Ave., Lake Oswego, Ore. 97034.



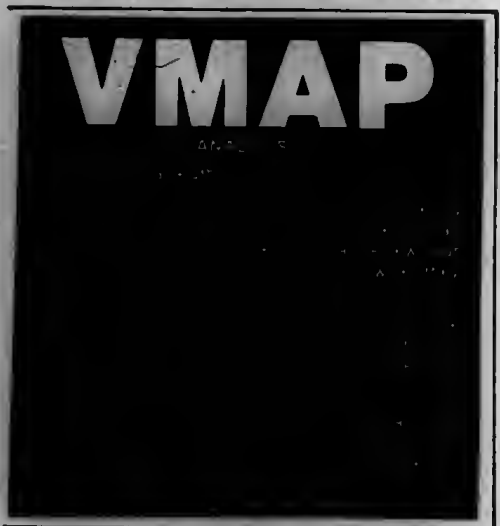
Interface Board Provides Connection for CDC 92660

BIRMINGHAM, Ala. — Banking Computers, Inc. has announced a dual-processor interface board that reportedly connects the Control Data Corp. 92660 Document Reader/Sorter to any computer system through a serial port.

Called the Universal Asynchronous Reader/Sorter Interface, the unit contains all software in read-oniy memory (ROM) to capture documents, select pockets for documents and transfer formatted images to the attached processor. Standard sort specification forms are provided for downloading to the internal table-building program, which is also located in ROM. All programs are controlled by thumb wheels on the reader/sorter control panel.

Any processor that has utility programs to edit and has provisions to read or write to a serial port can use the interface, the vendor claimed.

The interface board costs $2,950 from Banking Computers, 2643 Paden Place, Birmingham, Ala. 35226.



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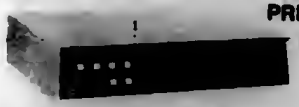

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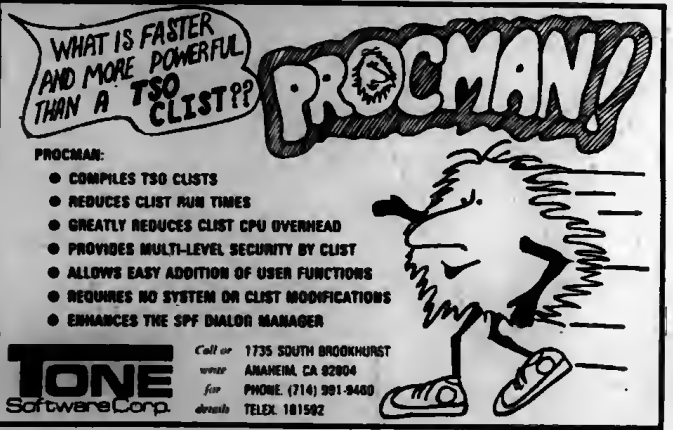

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GE Dot Matrix Printers Unveiled for Micro Use

WAYNESBORO, Va. — General Electric Co. has unveiled two dot matrix printers for use with personal computers.

The two tabletop printers of the newly developed 3000 PC series are the 3014 and 3024 models. These products are said to use various emulation techniques for plug-to-plug compatibility with popular personal computers and application software, according to the vendor. The printers reportedly print at speeds ranging from 40 to 400 char./sec.

The printers cost $1,350 and $1,550, respectively. Further details are available from GE's Data Communication Products Department, Waynesboro, Va. 22980.

Multibus-Based Micros Get Printer Controller

SAN DIEGO — Systech Corp. has introduced a dual printer controller that ties to multibus-based microcomputers.

The MLP-2000 printer controller was designed to adapt automatically to Dataproducts Corp. or Centronics Data Computer Corp. interfaces. It reportedly supports two printers simultaneously, mixed or matched. For example, one port could be servicing a letter-quality communications printer while the other port is servicing a 2,000 line/min line printer.

The controller is priced at $645 without cables. More information is available from the vendor at 7630 Miramar Road, San Diego, Calif. 92126.

Summa 300 Modem Out For Apple II, IIe Micros

BOSTON — Zoom Telephonics, Inc. has announced the Summa 300, a 300 bit/sec modem for Apple Computer, Inc. Apple II and Apple IIe microcomputers.

The Summa 300 is a self-contained unit that combines a modem and Apple communications circuitry on a single-slot card. The unit provides telephone connection to computer data bases without the need for additional peripherals or software, the vendor said.

The Summa 300 plugs into any Apple I/O expansion slot and costs $119, the vendor said from 207 South St., Boston, Mass. 02111.

VR Data Announces Winnie Subsystem

FOLCROFT, Pa. — VR Data, Inc. has announced the Hard Disk III, a 5M- to 15M-byte Winchester disk subsystem for a variety of microcomputers, including IBM's Personal Computer and Personal Computer XT and Apple Computer, Inc.'s Apple II and Apple IIe.

The Hard Disk III includes a case, power supply, cables and mounting hardware. Adapters to use the disk subsystem with various microcomputers are also available, according to a spokesman for the vendor.

Prices for the Hard Disk III start at $995. Adapters start at $150, the vendor said from 777 Henderson Blvd., Folcroft, Pa. 19032.

Tape Backup Device Runs on IBM XT Micro

OVERLAND PARK, Kan. — Tallgrass Technologies Corp. has announced two streaming cartridge tape backup devices for the IBM Personal Computer XT.

The first is the TG-4020, which is a 20M-byte tape backup system that can stream data or selectively back up and restore data from the XT's hard disk, according to the vendor. The TG-4050 is a 45M-byte version of the same thing, the vendor said.

The TG-4020 costs $2,195, and the TG-4050 costs $2,495. Tallgrass can be reached at 11667 W. 90th St., P.O. Box 12047, Overland Park, Kan. 66212.

Bar Code Products Tie Into Cullinet System

WESTWOOD, Mass. — Computer Identics Corp. has announced a series of products designed to integrate bar code data collection into Cullinet Software, Inc.'s Cullinet Manufacturing System.

Computer Identics is offering a variety of bar code products and systems software to accept data from the

Bits & Pieces

firm's bar scanners and buffer and format the data to be compatible with the Cullinet Manufacturing System. The software also communicates messages to the mainframe data base in the required protocol transaction routine, the vendor said.

Complete bar code systems cost from $35,000 to about $130,000, the vendor said from 31 Dartmouth St., Westwood, Mass. 02090.

Compuscan Introduces Compact Page Readers

FAIRFIELD, N.J. — Compuscan, Inc. has introduced a family of compact modular optical character recognition page readers.

The Series 80 models, which fit on a desktop or pedestal, were designed for fast input of typewritten material into a range of automated systems.

The three models in the series offer the user a selection of scanning speeds and a number of resident typestyles. Prices range from $12,990 to $14,990, the vendor said from 81 Two Bridges Road, Fairfield, N.J. 07006.

HP Takes Wraps Off Small-Format Plotter

PALO ALTO, Calif. — An intelligent small-format pen plotter for personal computers was introduced here by Hewlett-Packard Co.

The HP 7470, intended for use by business professionals, is said to produce high-quality graphics on paper or transparencies, including pie, bar and line charts, technical drawings and maps. The two-color pen plotter is compatible with the HP desktop, personal and larger computers, as well as business and personal computers from IBM, Apple Computer, Inc. and Commodore Business Machines, Inc.

The plotter is priced at $1,550 from HP at 3000 Hanover St., Palo Alto, Calif. 94304.

Minicassette Recorder Loads, Stores Programs

TROY, Ohio — Analog and Digital Peripherals, Inc. has announced a microprocessor-based RS-232 or 8-bit parallel minicassette recorder system for program loading, data logging, peripheral storage, data transmission, software distribution, paper tape replacement and printer spooling.

The recorder features a self-contained operating system.

The system is priced at $589 from the vendor at 815 Diana Drive, Troy, Ohio 45373.

Star Micronics Slashes Gemini 10 Printer Price

DALLAS — Star Micronics has reduced the price of its Gemini 10 dot matrix impact printer from $499 to $399.

The printer features 100 char./sec logic-seeking bidirectional printing, a 2.3K-byte print buffer, bit image and block graphics, five print sizes, italic and special character fonts, superscripts and subscripts, boldface, backspace and underline.

Star Micronics is at 1120 Empire Central Place, Dallas, Texas 75247.

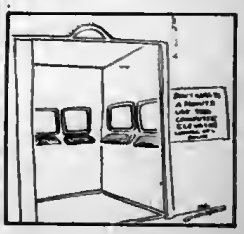
Unit Features Voltage Required by Micros

GLEN COVE, N.Y. — Displex, Inc. has announced a wide input voltage range version of its DLC-8/DLC-16 series ac line conditioners.

The unit reportedly will deliver output voltage in the 105V to 125V range that is required by most small micro and minicomputer systems, according to the vendor, with input line voltages as high as 140 Vac or as low as 80 Vac.

A 2-kVA (kilovolt amp) capacity DLC-16-A — 4.8 in. high, 10 in. wide and 14 in. deep — costs $795. A 1-kVA DLC-8-1A — 4.8 in. high, 8 in. wide and 11 in. deep — costs $535.

The firm is located at 79 Hazel St., Glen Cove, N.Y. 11542.



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Study Issued on Voice Messaging E-Mail

By Katherine Hafner
CW Staff

BOSTON — Before voice messaging electronic mail systems can yield impressive benefits for offices, users must be convinced that the technology can help them solve their communications problems.

Furthermore, a direct connection must link cost justification, prospective application and implementation.

So concluded the "Report on Electronic Mail," a study published recently by The Yankee Group here. To justify the cost of implementing a digital voice message system, also known as voice store and forward, it is important to target initial installation at a specific group of users with high payoff application, the study reported.

"If the level of internal communication is high enough and the applications have a great potential for cost savings, it may be possible to justify the cost of a large system solely on the basis of a relatively small user group," the study noted.

High payoff applications of digital voice message systems are as yet difficult to pinpoint, and right now, digital voice message systems might be a solution in search of a problem, according to Yankee Group Senior Analyst H. Paris Burstyn, who edited the report. "The one application I can see right now would be sales-related, where representatives are geographically dispersed and messages are short," Burstyn said.

"Today, there are not a lot of applications, but I have faith in the long-term viability. The market will evolve and applications will exist," he predicted. "In the next five years, you will see hybrid systems of text and voice."

Results of the study indicated that the average manager spends over an hour per day on the telephone.

The Yankee Group study estimated that if an average user places one digital voice message system call per day during the first year using the system — assuming that an average minute of telephone time costs 15 cents — a group of 300 users could realize $7,968 in savings. In addition, while a conventional business call averages 4.2 minutes in length, a digital voice message system call lasts roughly 1.75 minutes, and savings resulting from shorter messages could reach $19,035.

Taking into account fewer calls placed and shorter messages, after 10 years with a digital voice message system, the total soft-dollar savings for a 1,000-user group could reach $4,948,200. Hard-dollar savings for the same group are estimated at $4,984,000, which could bring the total savings to $9,932,000, the study concluded.

According to The Yankee Group, the installation of digital voice message systems should be done with the following objectives in mind:

- Avoiding telephone tag.
- Eliminating time zone inconveniences.
- Reducing memo volume.
- Allowing users to deliver information at convenient times.
- Reducing interruptions.
- Ensuring message integrity.
- Speeding communications and reaction times.

The study suggested that systems vendors and service bureaus help users identify applications, develop the necessary software and implement it, in order to demonstrate that their particular systems or services are best suited to the potential user's applications.

The critical component known as an implementation program must be well-designed in order to avoid underutilization of a digital voice message system. An effective program includes three phases: preimplementation, a time to understand and identify needs; implementation, during which priorities for specific applications are defined and established; and follow-up, which helps managers assess system use and program success.

The cost of the four-part study is $950. More information is availabie from The Yankee Group, 14th Floor, 89 Broad St., Boston, Mass. 02110.

Microsoft Unveils 'Multi-Tool Word'

BELLEVUE, Wash. — Microsoft, Inc. has announced microcomputer word processing software to supplement the company's line of Multi-Tool software packages.

Multi-Tool Word features a provision for an electronic mouse for pointing and command execution, an UNDO command, advanced word wrap features, direct formatting capabilities and a context-sensitive on-line Help system, according to a vendor spokesman.

The software's features include multiple windows; a set of preformatted options called style sheets; capabilities for footnotes, subscripts and superscripts; glossary buffers; multiple fonts and formats; and a horizontal scroll for text that is wider than the screen.

The Microsoft Mouse, an electronic pointing device, enables users to designate text, scroll through text, select commands, select options within commands and execute commands.

Multi-Tool Word is priced at $475 from the Microsoft at 10700 Northup Way, Bellevue, Wash. 98004.

Three WP Systems Serve 105 Agencies

By Paul Gillin
CW Staff

NEW YORK — The uses of word processing at New York City's Department of General Services (DGS) are about as varied as the 105 operating agencies the department serves.

Two years ago, DGS restructured its word processing operations around three Wang Laboratories, Inc. OIS 140 computers. The systems, along with three 10M-byte disk drives, are distributed at 36 locations in two buildings, supporting 57 CRT terminals. Also tied into the system are 28 printers and a Wang typesetter.

"Today, most tasks that involve extensive text processing or large data bases are done using word processors," Dean Plummer, director of word processing management and training, said.

With the Wang typesetter, the staff produces sections of *The City Record, The Green Book* official directory, building and electrical code books, seven newsletters and other publications. Use of the typesetters has enabled the department "to offer other city agencies more reasonable typesetting rates while defraying the cost of our equipment," according to Plummer.

DGS's various divisions have found word processing useful for producing a range of documents. For instance, the Division of Real Property uses it to edit and print lease documents and other legal materials. And the Bureau of Design uses the system to produce contracts and bid invitations involving boilerplate language and standard specifications.

Most of the 20 DGS offices that share the Wang systems have developed applications that go beyond text editing. In a recent fund-raising drive, for example, WNYC radio and television, the city's broadcasting system, used list processing to key in donor names and to mail out immediately pledge invoices and track payments, Plummer said. The Bureau of Electrical Control uses the system to issue renewal notices and licenses for electricians licensed by the city, track performance and maintain a complaint history.

Monthly statistical reports for the department and agencies are compiled and updated through math glossaries and OIS Basic programs, Plummer said. The Division of Financial Management and Administration, for example, supplies DGS line managers with current financial data down to the budget line level.

Tracks Almost Everything

DGS also uses the system "to track just about everything," he explained. "We're able to follow citizen complaints from investigation to resolution. We're tracking telephone bills for all city agencies, both charges and payments."

The department's most involved tracking system monitors requisitions at the Division of Municipal Supplies, which handles large purchases for all city agencies, Plummer said. The division has its own word processing center with capabilities to track purchases through delivery and inspection.

At the word processing center, a separate tracking system traces contracts and purchase orders as they move through key entry and proofreading. "This allows us to use the document summary collector to run productivity analyses on the operators," Plummer said. "We have a glossary that computes those productivity statistics and another that can do a graphic display using symbols of the figures."

DGS is also using the tracking systems as a mailing list and resource directory. An aging report has been instituted as a partner to the word processor-stored tracking system.

With programs written by the staff in OIS Basic, the managers can now monitor the time it takes for requisitions to pass from one processing stage to another, Plummer noted.

Vector Graphic Offers E-Mail For Linc Local-Area Net

THOUSAND OAKS, Calif. — Vector Graphic, Inc. has announced an electronic mail system designed for use with its Linc local-area network.

Mailinc enables the user to compose a message and send it to another user's mailbox and to retrieve messages that have been placed in a mailbox. It reportedly permits the user to switch between sending and retrieving messages in order to read a message, send a response and then retrieve the next message.

Mailinc displays a memo screen that tells who the message is for, who it is from, the subject of the message, whether a response is required, the date the message was sent, space for the message itself, a command mode line and a line that displays Help messages and command options. Commands are selected by pressing an appropriate special function key.

Both personal and group mailboxes can be created. In addition to a password required to unlock a mailbox, the sender may encrypt a confidential message by entering a second password.

Mailinc is priced at $1,595 from Vector Graphic, 500 N. Ventu Park Road, Thousand Oaks, Calif. 91320.

Adds Introduces Software For Mentor 3000, 4000, 5000

HAPPAUGE, N.Y. — Applied Digital Data Systems, Inc. (Adds) has introduced two software systems for use with the company's Mentor 3000, 4000 and 5000 computer systems.

Office Augmentor, designed to help manage the modern office, provides electronic mail, word processing, teleconferencing, an executive desk diary, an appointment scheduler, personal telephone directories and calculator functions. The menu-driven system includes a Help feature to explain menu selections.

All documents, telephone numbers and system-generated mail are private and can be protected with personal passwords, according to an Adds spokesman.

Calcumentor is an electronic spreadsheet system with full access to the Mentor data base structure and the ability to access data generated by other applications.

Office Augmentor sells for $3,500 and Calcumentor is priced at $500. Adds is based at 100 Marcus Blvd., Happauge, N.Y. 11787.

Typewriters Get Conversion Aid

CHICAGO — A.B. Dick Co. has introduced an accessory component said to convert its Magna I and Magna II electronic typewriters to high-speed printers or extra keyboards for its stand-alone Magna-Writer information and text processing system.

Write-On consists of a circuit board, cable and switch. It is said to double a user's word processing capability by providing two separate keyboards for the creation and editing of documents. The two keyboards can reportedly be used simultaneously with a delayed printing function.

Write-On carries a suggested retail price of $695, and Magna-Writer, which offers word processing, asynchronous Ascii communications, an optional Digital Research, Inc. CP/M operating system and CP/M-based software, math, background printing, merge text, and pagination, sells for $3,995. A.B. Dick is based at 5700 W. Touhy Ave., Chicago, Ill. 60648.

Word Processor Includes Printer

LOS ANGELES — Computers International has introduced an entry-level word processor that includes an intelligent letter-quality printer, 12-in. display and detachable IBM-style keyboard.

The Daisywriter One word processor also features 44 function keys that are labeled, color-coded and grouped. The function keys allow with one keystroke right-margin justification, automatic centering, underline, boldface and shadow print. The printer included is the Daisywriter 2000.

The word processor sells for $2,750 from Computers International, 3540 Wilshire Blvd., Los Angeles, Calif. 90010.

Comrex Printer Bows

TORRANCE, Calif. — A daisy-wheel printer has been introduced here by Comrex International, Inc. that reportedly provides users with letter-quality printing and other word processing features.

The Comriter CR-II printer's features include superscript, subscript, backspace, underline, boldface, double strike and proportional spacing, the vendor claimed.

The product is priced under $700. Further details may be obtained from Comrex at 3701 Skypark Drive, Torrance, Calif. 90505.

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Sperry Gets 15% Equity In Trilogy

By Tom Henkel
CW Staff

BLUE BELL, Pa. — Sperry Corp. has acquired a 15% equity position in Cupertino, Calif.-based Trilogy Ltd. as part of a $42 million deal which gives Sperry an option to use Trilogy's semiconductor packaging technology. A Trilogy spokesman noted the two firms will probably share other technologies as well.

Announced jointly by Sperry Chairman Gerald G. Probst and Trilogy Chairman Gene M. Amdahl, the 15% equity position comes in the form of new voting preferred shares. In addition, Sperry can use Trilogy's semiconductor packaging process in its captive semiconductor facility, a Sperry spokesman said. Furthermore, the $42 million deal will involve "close technical cooperation" between the two companies, according to Trilogy Vice-Chairman Carl Amdahl.

Possible other joint ventures

(Continued on Page 154)

CW Photo by B. Laberis

Panelists at last week's U.S. government-sponsored workshop on NTT procurement included (from left) Dr. David Duke, Corning Glass; Thomas Alexander, Infotron Systems Corp.; Steve Levy, Motorola, Inc.; Joseph Connell, Telesciences, Inc.; and Charles Haller, ITT Asia Pacific Ltd.

NTT Gradually Liberalizing Its Procurement Policies: Panel

By Bill Laberis
CW Staff

NEWTON, Mass. — Getting Nippon Telegraph and Telephone Corp. (NTT) to open its ample procurement doors wider to foreign suppliers is like turning a battleship: It is a long, slow process that moves under its own momentum once it gets started.

That was the heart of the message delivered by a panel of U.S. vendor representatives and their U.S. government hosts at a workshop here last week on NTT procurement policies.

Moreover, according to the panelists, it appears that NTT is anxious to end its de facto policy of buying exclusively from Japanese suppliers in meeting its $3 billion-plus annual procurement needs. Thus, NTT's most recent efforts to liberalize its procurement policies are making believers out of some U.S. vendors, who formerly complained that such efforts were tokens rather than significant moves to change the 30-year-old ways of the Japanese communications company.

The workshop was cosponsored by the U.S. House of Representatives and the Commerce Department. Appearing as a House representative, Edward J. Markey (D-Mass.) opened the panel discussion with a warning that trade between the U.S. and Japan "must be fair," citing the opening of the U.S. telecommunications industry to foreign suppliers via the court-ordered divestiture of AT&T.

Markey's concerns were echoed by Clyde Prestowitz, deputy assistant secretary for international economic policy at the Commerce Department. Prestowitz said the Reagan administration has attempted to identify U.S.-made products that can be competitive in Japan in order to minimize the multi-billion-dollar trade deficit the U.S. maintains with Japan. Prestowitz said the U.S. is particularly strong in telecommunications products, and as a result, the administration is interested in more liberal NTT procurement policies.

Two years ago, Japan and the U.S. signed a bilateral agreement targeting more liberal NTT procurement policies. According to the vendor representatives on the panel, that agreement marked the dawning of a

(Continued on Page 144)

In Government Fraud Trial

CSC, Employees Found Innocent

By Jake Kirchner
CW Washington Bureau

ALEXANDRIA, Va. — A federal jury has found Computer Sciences Corp. (CSC) and several employees innocent of charges of defrauding the government by overbilling on a large computer services contract. Despite that ruling, the company and its employees face trial on additional related charges later this month.

The jury verdict, delivered in federal court here June 3, ended the first of three trials stemming from a lengthy 1980 indictment charging CSC's Infonet Group with bribing a General Services Administration official to receive the National Teleprocessing Services (NTS) contract. The firm and its employees were also charged with fraudulently overbilling the government in connection with the contract, which brought CSC more than $100 million between 1972 and 1977.

After two years of court battles over procedural matters relating to the indictment, the first part of the case went to trial here in mid-May, pitting the government against CSC; John W. Luke, former Infonet president; Erwin L. Allen, one-time Infonet vice-president; Peter C. Loux, former CSC branch manager; and Herbert G. Blecker, president of Icarus Corp., a Maryland subcontractor to CSC on the NTS contract.

Specifically, the defendants are charged — in what presiding U.S. District Judge Richard L. Williams termed "a technical kind of case" — with five counts of mail fraud and two of making false claims to the government. A four-man team of Justice Department attorneys sought to prove that CSC and the other defendants fraudulently billed the Energy Re-

(Continued on Page 154)

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NTT Seen Liberalizing Procurement Policies

(Continued from Page 141)
new day in their relationship with NTT. However, several panelists said, some serious problems remain, and NTT can still be a difficult customer with whom to deal.

Thomas Alexander, vice-president of sales at Infotron Systems Corp., maintained that NTT's procurement procedures are akin to those of the U.S. Defense Department — and no less cumbersome. Infotron has marketed its line of statistical multiplexers to NTT.

Alexander said that the terms and conditions of NTT procurement contracts "are very, very stringent." Alexander said NTT has asked Infotron for spare parts guarantees of up to 10 years. This, Alexander said, is unreasonable in light of two- to three-year product cycles and the fact that Infotron cannot guarantee that its own suppliers will guarantee spare parts deliveries over such a long period.

Steve Levy, senior vice-president for Japanese operations at Motorola, Inc., agreed that NTT's conditions and terms are "onerous at times." Levy said NTT has asked Motorola for proprietary rights on certain products developed by Motorola, even though NTT did not pay for the product design.

To the credit of NTT, Levy said the company has greatly improved what was formerly a marginal trade situation. Contract specifications are now in English, and bids may be placed at NTT's New York office. Previously, bid placement meant a trip to Tokyo.

Both Levy and Joseph Connell, vice-president of Telesciences, Inc., said that NTT's stated intentions to liberalize procurement have not yet percolated down through the company's middle management, 'making some deals particularly costly, particularly for a smaller vendor like Telesciences. Connell said Telesciences has been actively marketing its line of switching system peripherals for four years and has yet to make a sale to NTT.

Responding to the panelists' comments, Ichio Kata, NTT's director of procurement, said NTT is, in fact, getting its procurement message down through the ranks. Noting the complaints of foreign vendors who claimed they had been ignored by NTT until recently, Kata said, "We didn't really know much about them either. We really were not used to the international way of doing business."

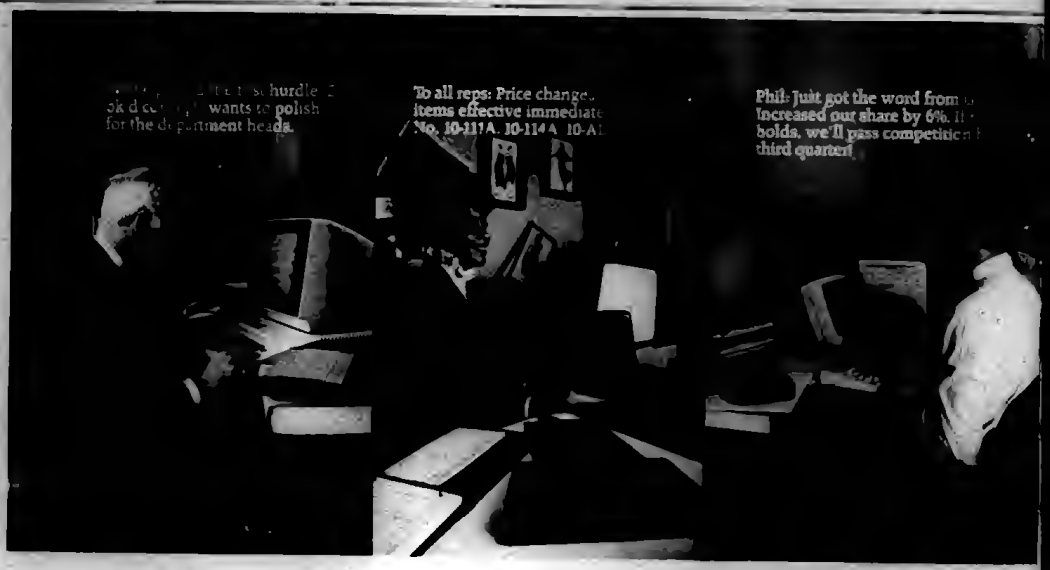
NTT Project Accepting U.S. Bids

NEW YORK — In keeping with its previous pronouncements to open its procurement markets to foreign companies, Nippon Telephone and Telegraph Corp. (NTT) has announced that it is accepting applications from U.S. companies for participation in the research and development of satellite communications demand assignment service equipment.

The solicited project is for a device that controls satellite channels by calls at a transmission rate of 32K bit/sec to 1.5M bit/sec. The device includes demand assignment control remote station units, each of which can accommodate a maximum of 128 terminals, and a demand assignment controller that can control 100 remote station units.

NTT requires one prototype demand assignment controller for use in satellite communications by July 1984 and another after 1985. By 1984, NTT will also require two demand assignment control remote station units, with the number to be installed thereafter still undecided.

This March, NTT modified its procurement application process, accepting applications in English at its New York office to facilitate access for U.S. companies into the potentially lucrative NTT market. U.S. companies garnered about $40 million worth of contracts with NTT in 1982, more than double the total the previous year.



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Hayes has prepared a directory of the many communications pro-

Foreign Suppliers Never Excluded, NTT Exec Says

CW Photo by B. Laberis

Yamaguchi listens to NTT procurement workshop.

By Bill Laberis
CW Staff

NEWTON, Mass. — Despite what many U.S. vendors apparently believe, Nippon Telegraph and Telephone Corp. (NTT) has never attempted to exclude foreign suppliers from its formidable procurements, which will total $3.2 billion this year.

Rather, the fact that virtually all of NTT's procurement contracts were awarded to Japanese companies until very recently is more the fault of the foreign vendors, who formerly had put forth "almost no sales effort in the NTT market."

So claimed Haruo Yamaguchi, NTT's senior managing director, chief engineer and generally regarded third-ranking executive of the Japanese communications giant. Yamaguchi gave his observations in a translator-assisted interview when he appeared here at a workshop on NTT procurement. The workshop was sponsored by the U.S. Commerce Department and the U.S. House of Representatives.

According to Yamaguchi, the Japanese government, which controls NTT's budget, never stated to NTT officials or implied that NTT's purchases should be directed primarily or totally to Japanese vendors. Instead, Japanese vendors used the technological know-how acquired during visits to foreign suppliers to manufacture proprietary products for NTT, he said.

Yamaguchi's comments contradicted those made earlier during the workshop by Clyde Prestowitz, deputy assistant secretary for international economic policy at the Commerce Deparment. Until two years ago, when the U.S. and Japan signed an agreement to liberalize NTT's procurement policies, part of NTT's function was to use its procurement power to assist in the development of domestic telecommunications manufacturers, Prestowitz said. Unlike AT&T, NTT has no manufacturing capability.

The fact that Japanese vendors captured virtually the entire NTT procurement market until recently "is simply a situation that grew out of practice," Yamaguchi said. "It is really no different than AT&T buying through Western Electric, or the European communications companies buying through the local manufacturers."

In 1982, foreign vendors captured about 1% of NTT procurements. Asked in what market segments U.S. vendors might be most successful, Yamaguchi pointed to turnkey tefecommunications equipment "that comes with the software built right in." He said software technology is "much more advanced in the U.S. than in Japan."

Procurement at NTT is divided into three broad tracks, the first of which is equipment which is largely of the off-the-shelf variety. Yamaguchi said that U.S. vendors "could capture all of this market, if they are fast enough." Track 2 pertains to equipment with the ability to be specially modified, and Track 3 procurements pertain to joint development ventures between NTT and foreign or domestic vendors for new, advanced communications systems.

Asked if the U.S. government pressure to liberalize procurement requirements affected NTT's posture toward foreign suppliers, Yamaguchi replied, "We are in effect still closely tied to the [Japanese] government. Political realities are what they are. So yes, we felt that pressure."

And asked what advice he would give to U.S. vendors wanting to crack the NTT market, Yamaguchi said, "Get to know what NTT is and what it needs, then supply us with the best quality products."

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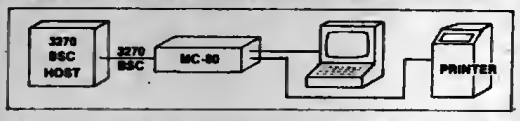

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Electronics Industry Survey Finds Turnover Rate Down

PALO ALTO, Calif. — The employee turnover rate in the electronics industry fell slightly in 1982, continuing its three-year downward trend, according to a recent study conducted by the American Electronics Association (AEA) Benchmark Survey.

Data collected from 912 AEA-member companies showed that the total employee turnover rate was 23.1% for the year, compared with rates of 24% in 1981, 26.3% in 1980 and 35.4% in 1979.

Turnover for nonexempt employees, defined as those who receive overtime pay, dropped to 25.5%, down from 30% the year before and 44.7% reported in 1979.

Turnover for exempt or salaried employees was 16.6%, up slightly from 1981's rate of 16.5%, the study reported.

"The underlying employee turnover rate has been coming down during the past few years as the electronics industries mature," according to Joe Weber, AEA human resource manager. "That downward trend appears to have stabilized, and the industry may see a more normal turnover rate in the future."

Weber said that turnover in the electronics industry is the result of a combination of factors, besides the growing maturation of the industry. Included among these factors are the state of the economy; the decreasing mobility of the American worker; the density of electronics companies in the area, which is linked to job availability; the significant number of new companies and start-ups; and, in general, the loyalty of electronics workers to their profession, rather than to their company.

The combined survey section of Arizona and Texas had the highest turnover rate last year, pegged at 29.8%. The Midwest region recorded the lowest turnover rate, 13.6%. The San Francisco Bay area, including the Silicon Valley, and New England, including the Route 128 area, both reported increased rates for the year, with the former pegged at 24% and the latter at 24.3%.

Southern California recorded the most significant decrease in turnover in 1982 compared with 1981. San Diego's rate fell from 28.2% to 21.6%; Los Angeles from 30% to 21%; Orange County from 31.9% to 24.4%; and Santa Barbara from 33% to 24%.

More information about the survey is available from AEA at 2680 Hanover St., Palo Alto, Calif. 94304.

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The Benchmark in World Class Computers

HP, University To Start Library

CUPERTINO, Calif. — The University of Tennessee and Hewlett-Packard Co. have announced an agreement whereby the school will create an educational library for the HP 3000 in exchange for an HP 3000 minicomputer at reduced cost.

The agreement was designed to make the library available to educational institutions owning HP 3000s as well as to users interested in upgrading to the HP 3000 series, the company said. Scheduled for completion in two years, the program will feature phased releases to allow users to receive software while modules are developed.

The library will include about 80 programs covering a range of physical, social and applied sciences; programs in the public domain on the HP 2000 educational library; and the school's Computer-Aided Learning (CAL) software.

The science and CAL programs will be priced by the school, which will also distribute them directly to end users. A master set of all CAL manuals will be provided to the HP 3000 International Users Group.

Life Cycle of IBM CPUs Difficult to Predict: IDC

By Katherine Hafner
CW Staff

FRAMINGHAM, Mass. — Determining the life cycle of computer equipment is becoming increasingly difficult, especially in the IBM world.

This was the conclusion reached in a recent study published by the Leasing Planning Service of International Data Corp. (IDC), based in Framingham, Mass.

"The recent deluge of new products introduced by IBM and competitors, spurred by accelerated technological advancements and increasing competition, indicates a shortening of the product life cycle, particularly for CPUs," the study, titled "Residual Value Update for CPUs and Peripherals, Computer Life Cycles," noted.

According to the study, products pass through four major life cycle phases (see chart): active marketing life, or the period in which the equipment is actively marketed by the vendor; critical replacement, which is the period just prior to announcement of a replacement product; late life, or the stage when the replacement product's shipments begin to decline just before replacement; and residual life, or the final phase in the product life cycle, when residual values are very low and highly dependent on the equipment's general reputation, as well as the vendor's maintenance and support policies.

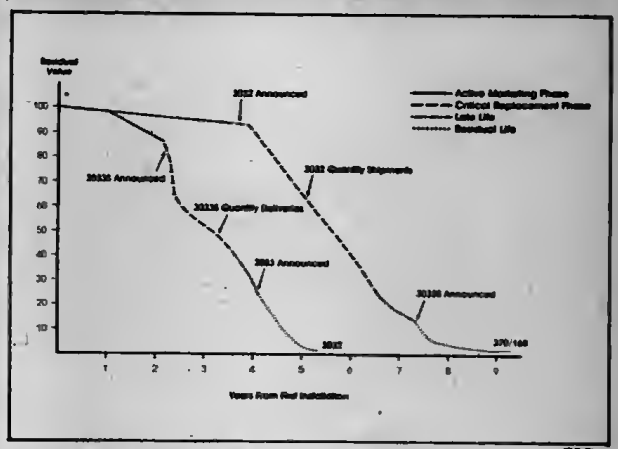
The focus of the IDC study was on IBM mid- and upper-range processors — 30 series, 3080 series and 4300 series — and IBM I/O devices and storage products. IBM's revenues and earnings rose 18% and 22%, respectively, in 1982, a record that can be sustained in part by a continued trend toward shorter product life cycles, the study noted.

Processor Prices

Prices in the 3031 market have fallen only slightly recently, which the study calls typical of a processor approaching the final stages of its product cycle. The 3032, recovering from a rapid slide in the second half of 1982, appears to be leveling out, and prices for 3033s, having sagged with the introduction of the 3083 family, are also holding their own.

A few more 308ls have appeared on the used market, with prices driven by large demand expected to remain strong. And the 4331 is beginning to flood the used market, as users find it necessary to upgrade to a more powerful system.

"For the past decade, IBM has manipulated its mid- and upper-range processors so that at any point in time, one or the other is in a peak shipment period," the study said. "If this tactic is to continue, 3080 series shipments can be expected to remain strong for the next two years, and new 4300 products must be unveiled by mid-1984 at the latest."



IDC Chart

Residual Values Over Product Life Cycle of the IBM 370/168 and 3032

The study found 3350 disks have maintained their price stability through another quarter, with no "catastrophic" change anticipated in the near term. The long term will be governed by how successful IBM has been convincing users to go with 3370s and 3375s on their 4300s.

"A more important consideration is the 3380 market," the study noted. IDC estimates 8,000 to 9,000 spindles were shipped in 1982 with preliminary projections of 16,000 to 18,000 spindles to be shipped in 1983.

"As for the 3380s, IBM's aggressive price cutting and volume discounting have prompted users to make a commitment to take the drive over a period of time," the study pointed out. "While no used drives have yet appeared, the market is gearing up for lively activity, and PCMs [plug-compatible manufacturers] are preparing for a fierce battle."

More information is available from IDC, 5 Speen St., Framingham, Mass. 01701.

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Friday, June 24th, 11 AM to 7 PM
Saturday, June 25th, 10 AM to 6 PM
Sheraton Centre, New York, New York

The EMCE Exposition

These are just some of the companies exhibiting at EMCE, along with the products and services they'll be displaying:

ADDISON-WESLEY PUBLISHING CO., INC. — 406
One Jacob Way, Reading, MA 01867, (617) 944-3700
Addison-Wesley is an independent publisher of materials for elementary and high schools, colleges, industry and professional markets and of nonfiction adult trade and children's books. Publications are edited, produced and marketed worldwide. The company has recently added software to the list of publications.

ALEXANDER GRANT & CO. — 301
555 Capitol Mall, Suite 300
Sacramento, CA 95814, (916) 441-7232
Alexander Grant & Company is a nation wide CPA firm with affiliates worldwide. Audit, tax and management advisory services are provided by over 60 offices throughout the United States. To meet client demand and to offer effective management tools for small to large companies, the firm has developed software products for microcomputers.

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AUERBACH PUBLISHING — 317
6560 North Park Drive, Pennsauken, NJ 08109, (609) 662-2070

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33 Highland Avenue
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BUSINESS COMPUTER SYSTEMS/ CAHNERS PUBLISHING CO. — 410
221 Columbus Avenue, Boston, MA 02116, (617) 536-7780
Business Computer Systems is a new computer publication devoted entirely to the users of business computer systems in business applications. Editorial coverage emphasizes peripherals, software and other related products for the expansion of business computer systems.

BUSINESS COMPUTING INTERNATIONAL — 210, 212
342 Madison Avenue, New York, NY 10173, (212) 697-9400
In the past two years, Business Computing International has emerged as a forerunner of innovation in small business computers. BCI now represents Sord, Hyperion, IBM and other major manufacturers. The Sord M23 series is a highly versatile line which emphasizes PIPS, a unique software system which lets the user integrate spreadsheets, mailing lists, graphs and text. The Hyperion combines sophisticated design, portability and full IBM PC compatible features.

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New York, NY 10169, (212) 599-0238
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CIRCLE BUSINESS MACHINES CORPORATION — 501
218 West 57th Street, 4th Floor
New York, NY 10019, (212) 265-4550
Circle Business Machines has been in business since 1914 serving the tri-state area's business and professional community with quality office products, training, support and service.

COMPUTERKNOWLEDGE CORPORATION — 507
12850 Hillcrest, Suite 108, Dallas, TX 75230, (214) 385-9700
ComputerKnowledge Corporation is a service company for all aspects of installation to operation of the IBM personal computer. We are specialists in training of operations and software products and provide consulting service for pre installation through after installation including selection of appropriate software. IBM has selected ComputerKnowledge to provide training on IBM personal computers for IBM product stores nation wide.

COMPUTERLAND — 702, 704
251-07 Northern Boulevard, Little Neck, NY 11362, (212) 423-5280
Computerland offers the finest variety of products and services including the IBM personal computer, Digital Rainbow 100, portable Compaq computer and the new Apple computer. We are also displaying network and communications systems for these computers. Whether you are looking for one computer system or a network of computers, come to Computerland because at Computerland we know small computers.

COMPUTER LANGUAGE COMPANY INC. — 610
140 West 30th Street, New York, NY 10001, (212) 736-8364

COMPUTERWORLD, DIVISION OF CW COMMUNICATIONS/INC. — 1010-1022
Box 880, 375 Cochituate Road
Framingham, MA 01701, (617) 879-0700
Computerworld, a weekly newspaper for the computer community, will distribute copies of its most recent issues from the booth. Also represented will be other publications and services offered by *Computerworld* and *CW Communications* around the world.

COMPUTERWORLD O/A, DIVISION OF CW COMMUNICATIONS/INC. — 1010-1022
Box 880, 375 Cochituate Road
Framingham, MA 01701, (617) 879-0700
Computerworld O/A addresses the information needs of the office automation planner, purchaser and implementer with coverage of both technological and human issues. Topics to be emphasized in 1983 include organizational strategies and planning, workstations, software, personal computers, user output technologies and communications.

COMPUTERWORLD ON COMMUNICATIONS DIVISION OF CW COMMUNICATIONS/INC. — 1010-1022
Box 880, 375 Cochituate Road
Framingham, MA 01701, (617) 879-0700
Computerworld on Communications (COC) addresses the information needs of individuals and organizations where communications plays an important role in overall systems. *COC* is structured to compliment the news coverage in *Computerworld* with in-depth, interpretative, tutorial and applications articles on the full range of communications subjects.

COMPUTRONICS DISTRIBUTING, INC. — 309
200 Benton Street, Stratford, CT 06497, (203) 377-7171
Computronics Distributing, Inc. will show the QX10 Epson business and personal computer with VALDOCS™ and CP/M operating systems and hard disk drive. Also displayed will be the Epson business quality and Comrex letter quality printers featuring Graftax Plus™ and user-definable character formats. The Epson portable personal HX 20 computer with word processing and modem peripherals will be demonstrated for sales and business applications. Be sure to see Epson's new line of high speed dot matrix FX series printers.

CREATIVE COMPUTER PERIPHERALS, INC. — 612
1004 Lacey Road, Forked River, NJ 08731, (609) 693-0002
Creative Computer manufactures and distributes a programmable function keyboard. *Keywiz* is user programmable and makes available 240 user programmable keys. The keyboard is a must for all word processing and spreadsheet applications.

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1111 Route 46 East, Little Falls, NJ 07424, (201) 785-9120
Data Development, Inc. is a dealer for Northstar computers specializing in general business and manufacturing applications. Our 14 year old company offers you a turnkey operation including custom programming and is committed to total support before and after the sale. We will be displaying the Northstar Advantage with business applications, graphics, and word processing on both diskette and Winchester hard disk.

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D&D Computer Information Services was formed more than two years ago by two analysts with a combined total of more than thirty years of experience on both mainframes and microcomputers. Close associations in the computer field including a working agreement with LOGICAL PLAYBACK, the oldest Altos dealer in the greater New York area, allows us to provide a professional approach to all problems encompassing software, hardware, service and support.

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10273 Yellow Circle Drive
Minnetonka, MN 55343, (612) 935-9111
Digigraphic Systems Corporation was founded in September 1981 with the objective of becoming an industry leader in the combined application of computer graphics, data communication and information management technologies.

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200 Baker Avenue, Concord, MA 01742, (617) 264-1589
DEC will exhibit the Rainbow 100 which includes two processors, an 8-bit and 16-bit program. The Rainbow 100 monitor shows a full 132-column screen. The Professional 300 series, a tool for business professionals will also be displayed. Handling 16-bit application software, the Professional is compatible with DEC's PDP 11 and VAX minicomputers and can be provided with broad communications capabilities enabling information exchange with DEC systems and other vendors.

DIGITAL MICROSYSTEMS, INC. — 611, 613
1755 Embarcadero, Oakland, CA 94606, (415) 532-3686
Digital Microsystems (DMS), originally Digital Systems, was founded in 1975 by Dr. John Torode who designed the first floppy disk subsystem for use on a micro. In 1977, DMS collaborated with Gary Kildall (Digital Research's founder) to design and implement the first microcomputer disk operating system, CP/M.

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800 Software is one of the largest mail order software houses in the country. Our giant inventory includes products from MicroPro, Perfect Software, Ashton-Tate, Sorcim, IUS, VisiCorp, Microsoft, Microstuff and many others. Technical support and customer service are only a phone call away.

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52 Vanderbilt Avenue, New York, NY 10017, (212) 867-9040
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ENTRE' COMPUTER CENTER — 404
130 Westchester Avenue
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Entre' Computer Center, in keeping with its philosophy of dealing with today's businessmen, will exhibit its latest microcomputer hardware provided by the major computer vendors (IBM and DEC). Additionally portrayed will be the modern manager's office complete with modem network access for information update and the utilization of the computer for graphic displays of business data.

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Route 517, Panther Valley Mall
Allamuchy, NJ 07820, (201) 850-8000
Entre' Computer Center is an IBM and DEC dealer supporting the IBM PC, IBM XT, DEC Rainbow and the DEC Professional. Entre' offers a full line of IBM, DEC and third party products, support and service.

EPS INC. — 217, 218
One Industrial Drive, Windham, NH 03087, (603) 898-1800

EXECUTIVE COMPUTER NETWORK, INC. — 407
373 Route 46 West, Fairfield, NJ 07006, (201) 575-5552

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P.O. Box 298, 380 N. Broadway
Jericho, NY 11753, (516) 681-6666
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590 Madison Avenue, New York, NY 10022, (212) 407-5910
IBM Product Center will be displaying the IBM personal computer XT. Highlighted will be technical support and other products provided by the IBM Product Center.

IMAGE EQUIPMENT AND SYSTEMS, INC. — 503, 505
90 Park Avenue, New York, NY 10016, (212) 697-8606
Image Equipment and Systems will show the Victor 9000 Business Computer and its related programs: word processing, dBase II, Victor-Calc, business accounting package and a graphics package.

INFORMATION MANAGEMENT, CONSULTANTS, INC. — 506
295 Northern Boulevard, Great Neck, NY 11022, (516) 466-4455
Information Management Consultants, Inc. is a full-service computer hardware/software firm providing professionals and small- to medium-size organizations with expert assistance in the implementation of data and word processing systems fit to their business needs. Information Management Consultants provides system requirement definitions, full installation and testing, on-site training, user documentation, user support and operational recommendations.

INFOWORLD — 1010-1022
530 Lytton Avenue, Palo Alto, CA 94301, (415) 328-4602
InfoWorld, a newsweekly for microcomputer users, provides current information in sections covering business, communications, education, new technologies and allied topics. Each issue explores specific subject thoroughly in the In Focus section. *InfoWorld* publishes comprehensive evaluations of new software and hardware products, as well as announcements of new products, human interest stories, analyses of trends, reader feedback and viewpoints, etc.

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The Executive Microcomputer Conference and Exposition is sponsored by the Conference Management Group of CW Communications/Inc publishers of *Computerworld InfoWorld, ISO World* and *PC World*.

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80 Wall Street, New York, NY 10005. (212) 422-5186
ISA is a software consulting firm that has developed several microcomputer packages for the TRS-80 and Apple II. We specialize in custom software development for both menus and macros. Our staff is highly experienced, especially in data management and data communications techniques. Our senior staff has performed large-scale system studies and analysis, performance measurement and project management functions.

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369 Lexington Avenue, New York, NY 10017, (212) 557-0180
Interdynamics Data Systems is a retail computer store specializing in computer systems for home, small business and professional needs. Products include Apple IIe and Apple III, DEC Rainbow and Professional computers, Epson QX10, Northstar Advantage and Horizon. Printers, terminals, software and accessories will also be displayed.

ITR/OTRONA ADVANCED SYSTEMS, INC. **504**
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Box 880, 375 Cochituate Road
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ISO World serves the independent sales organizations (ISOs) selling small computer systems (home computers to small minicomputers) and related products and software. This includes retailers, dealers, wholesalers, distributors, hardware and software systems houses, consultants, manufacturers' reps and other senior management individuals whose need to know the latest products and marketing trends stems from high volume buying responsibility.

KAYPRO **916**
575 Madison Avenue, Suite 1006
New York, NY 10022, (212) 605-0170

KEY SOFTWARE INC. **706**
2350 East Devon Avenue, Des Plaines, IL 60018, (312) 298-3610
Key Software, Inc. is the creator, developer and marketer of unique, cost-effective software systems for the IBM personal computer. Products are available through major computer retail outlets as well as direct from the developer.

MANAGEMENT TRAINING SYSTEMS **310, 312**
2699 S. Bayshore Drive, Suite 1000-A
Coconut Grove, FL 33133, (305) 854-2318
Management Training Systems will exhibit computer-based, self-instructional management training programs, management assessment programs and application programs for the IBM personal computer.

MATHTECH, INC. **409**
P.O. Box 2392, Princeton, NJ 08540, (609) 799-2600
Mathtech is a distributor for Vector Graphic microcomputers and software. Mathtech's services range from providing turnkey software for word processing, data management, financial modelling, communications and accounting to designing and customizing software to meet specific client needs. Emphasis is given to providing solutions to problems.

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555 De Haro Street, San Francisco, CA 94107, (415) 861-3861
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TRADING CORPORATION **708**
70-20 108th Street, Suite 105, P.O. Box 877
Forest Hills, NY 11375, (212) 261-6300
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PROCOMP SYSTEMS, INC. **405, 407**
333 West 52nd Street, New York, NY 10019, (212) 246-0074
ProComp manufactures a full range of single and multiuser computer systems using the CP/M software library.

RADIO SHACK **111, 113**
6 East 39th Street, Suite 401
New York, NY 10016, (212) 696-9800

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Meadows Office Complex, 301 Route 17 North
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Systronics Marketing will display the following products: Altos computers, Centronics printers, ADDS and Televideo terminals, BDT sheet feeders, Qume printers and business software.

TAU SYSTEMS CORPORATION **602, 604**
7115 Leesburg Pike, Suite 327
Falls Church, VA 22043, (703) 237-7200
TAU Systems Corporation is a designer and producer of microcomputer applications software and systems and specializes in microcommunication systems. The firm has installed microcomputer systems with integrated modem communications capabilities for the U.S. Government and for private industry.

T.H.E. JOURNAL **2111**
1600 16th Street, 2nd Floor
San Francisco, CA 94103, (415) 552-1581
T.H.E. Journal addresses school, college and training administrators with the issues in computer technology and education. Editorial topics address how the microcomputer can best be used in an instructional and administrative role. Circulation 57,000. Member: Audit Bureau of Circulations.

TOUCHER & SPREEN ASSOCIATES, INC. **708**
P.O. Box 765, Oakland, NJ 07436, (201) 337-7349
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YES INC. **1002**
1035 31st Street, NW, Washington, DC 20007. (202) 338-7874
Yes' Bookshop is noted for its series of specialized, annotated book guides and its personal service to mail-order customers all over the world. Yes's new computer book guide has been highly acclaimed by user groups, computer professionals and the media for the quality and accuracy of its judgements. The guide helps us readers choose the most useful book for their requirements.

YIPKON BUSINESS SYSTEMS/
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One World Trade Center, Suite 7967
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EMCE — Sheraton Centre, New York City June 23-29, 1983

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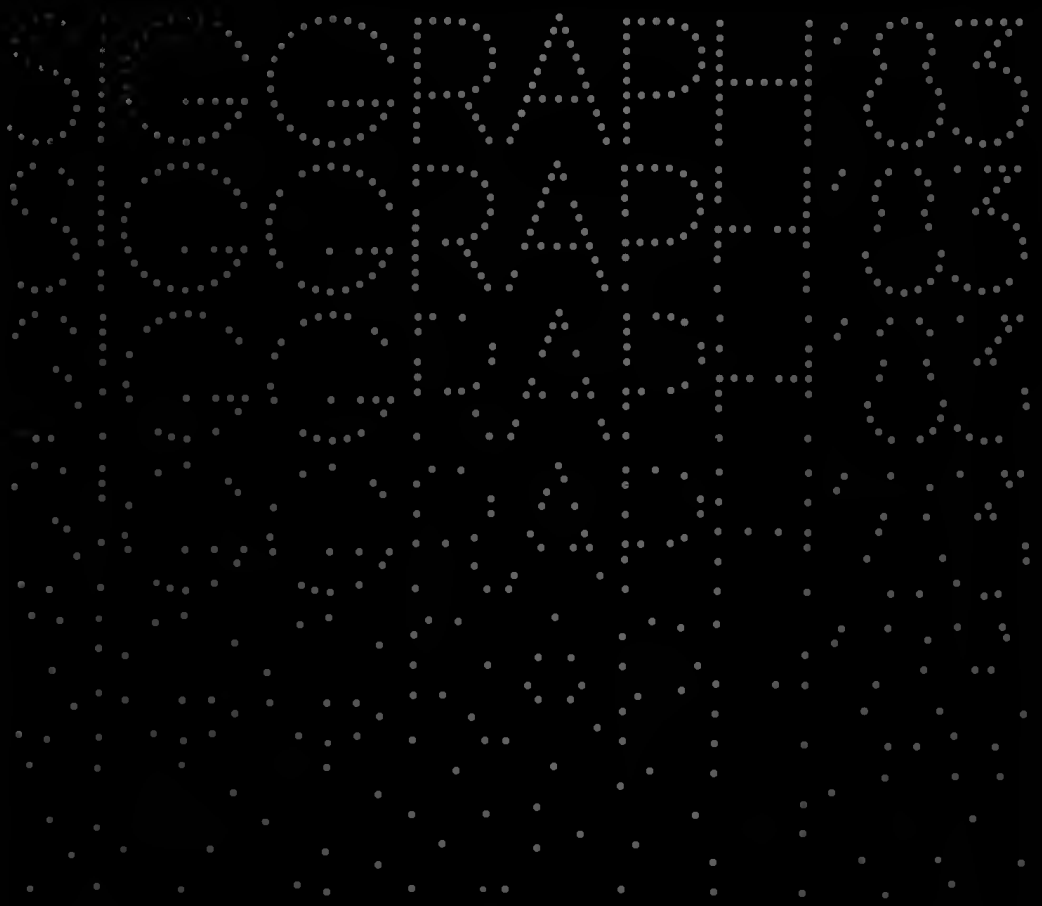

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Point 4 Data Chief: Unix Not To Dominate Small Business

By Jeffry Beeler
CW West Coast Bureau

ANAHEIM, Calif. — The head of a company that supplies Data General Corp. Nova-compatible processors has challenged the widely held view that the Unix operating system will dominate the small business computer sector.

During a recent interview here, Point 4 Data Corp. President William Rigby agreed with industry observers who foresee Unix capturing a significant share of the multiuser small systems market. He defined a multiuser small system as a configuration supporting from seven to 128 concurrent users.

But Rigby disputed industry observers who predict that Unix is expected to find its way into 50% or more of the world's installed multiuser minis.

Rigby's own forecast is that Unix's ultimate share of the small business systems arena will come to about 33%. The rest of the multiuser minicomputer pie, he predicted, will be divided evenly among competing products like Point 4's Iris; Pick & Associates, Inc.'s Pick; and Basic Four Corp.'s Boss operating systems.

"I think the people who are saying Unix will gain 100% of the small systems world are taking an extremist position," Rigby said. "Proprietary operating systems like Pick and Iris and Boss will continue to offer economic solutions to users and will provide a viable alternative to Unix."

Rigby based his conclusion on his claim that Boss, Iris and Pick are the only major small systems control programs that rely heavily on the Business Basic programming language. Unix, by contrast, uses its own language, known as C.

Unlike Cobol, Basic is a relatively unstructured language that permits users to implement and maintain their systems with comparative ease. This quality, in turn, has made Basic well-suited to the multiuser small business systems environment.

Any Basic-oriented operating systems like Boss, Iris or Pick would also be highly optimized for applications in which many terminals are running concurrently, he said.

Unix, on the other hand, "is less efficient in the multiuser environment than it should be," Rigby said. The main reason for this, he said, is that Western Electric is trying to make Unix "all things to all people." Though such an all-encompassing strategy maximizes the operating system's appeal and enlarges its potential customer base, this approach also results in significant performance trade-offs.

Rigby's said he is convinced that Basic is on the verge of a renaissance in the multiuser small business systems arena. He predicted that approximately a third of the world's installed small business systems will support Basic, with another third gravitating toward Cobol.

EDS Settles Case Against Iran

DALLAS — Electronic Data Systems Corp. (EDS) announced it has settled all its claims against the Social Security Organization of Iran and other agencies of the government of Iran.

The settlement provides for Iran to pay EDS $16,545,000 for services under the contract between EDS and the Social Security Organization. A dispute between Iran and the company arose following the nation's holy civil war in 1980.

EDS also announced that the settlement will have no material effect on its net income for the fourth quarter or the fiscal year ending this month.

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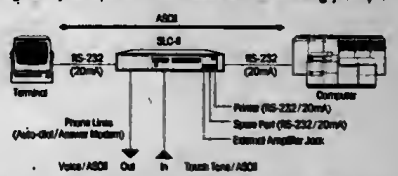

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CSC, Employees Found Innocent in Fraud Trial

(Continued from Page 141)

search and Development Administration (Erda) for almost $100,000 for providing Erda access to Icarus software.

The indictment charges that CSC increased by 50% the cost to Erda of a Budget Planning System software package after misleading the agency into believing the package was an improved version of a previous offering. The jury found the defendants innocent on all counts.

After the verdict was returned, Judge Williams strongly suggested that the government drop the remaining charges. He noted that the government continues to award contracts to CSC and called the case before him "a lovers' quarrel." A government attorney said last week, however, that the judge does not realize that an indictment by itself does not disqualify a firm from government contracts, adding that the Justice Department will proceed with the case.

In the next trial, scheduled to begin June 27 before a new jury, the government will try to prove CSC, Luke, Allen and two other Infonet employees, Thomas A. Marti and Norman W. Derrick, guilty of multiple counts of wire and mail fraud and of making false claims against the government. This part of the indictment involves allegations that CSC illegally inflated the billing algorithm of the NTS contract so that the government was charged a much higher service rate than CSC's commercial customers.

A secondary issue in that case developed when defendant Luke subpoenaed a number of CSC competitors, including Control Data Corp., Tymshare, Inc., National CSS, Inc., University Computing Co., General Electric Information Services Co. and Boeing Computer Services Co., to produce information on how they determine charges to their time-sharing customers.

Luke's attorneys argued that the information is critical to their client's need to show his actions were in concert with generally accepted industry practices. That line of argument is expected to be featured heavily in the next trial. One attorney connected with the case remarked that if this line of argument is allowed, the trial will quickly become a trial of the entire DP services industry, not just of CSC.

Lawyers for several of the corporations subpoenaed asked Judge Williams to quash the subpoenas, arguing they were burdensome in that they sought huge amounts of company records. Furthermore, they claimed the information was so sensitive that the firms could be greatly damaged economically if information on their operations and billing practices were to become available through the subpoenas to the public or their competitors.

Williams, however, called the disagreement over the subpoenas "rinky-dink" and directed opposing attorneys to work out a mutually acceptable agreement limiting the amount of information to be provided and setting rules for safeguarding the data's confidentiality.

The third and last trial of the indictment will be on racketeering charges against CSC Infonet employees in connection with their actions in obtaining and billing for the NTS contract. The racketeering charges in this matter against CSC itself were dropped prior to the beginning of the trials.

Sperry Acquires Equity in Trilogy

(Continued from Page 141)

include development of chips as well as power and cooling technologies, Carl Amdahl said.

"We believe Trilogy's innovative [semiconductor] technology is a major breakthrough in the levels of circuit integration and redundance that promise the utmost in reliability," Sperry's Probst said.

Carl Amdahl said the so-called superchip technology is an emitter-coupled logic device that reportedly can pack the equivalent of 100 semiconductor chips onto a 2½-in.-sq chip.

The device employs multiple redundant circuits and has the ability to correct internally logic faults, thus making the device highly redundant.

In addition, the Trilogy vice-chairman said, the semiconductor design would most likely be used in both commercial and scientific versions of Sperry's large-scale processors.

Trilogy founder Gene Amdahl noted, "Since Sperry and Trilogy currently serve different market segments, we feel that combining our technical and manufacturing strengths will allow both companies to accelerate their product development activities and market entry schedules."

Trilogy has announced its intent to develop large-scale processors that compete with top-of-the-line IBM mainframes.

Formed in 1980, Trilogy has yet to announce a product formally, although an announcement late next year is expected.

Both firms declined to offer further details of the agreement.

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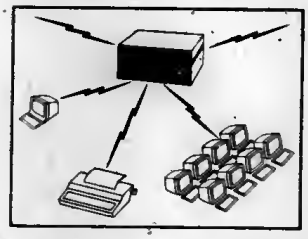

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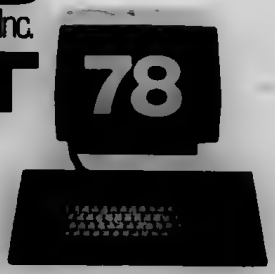

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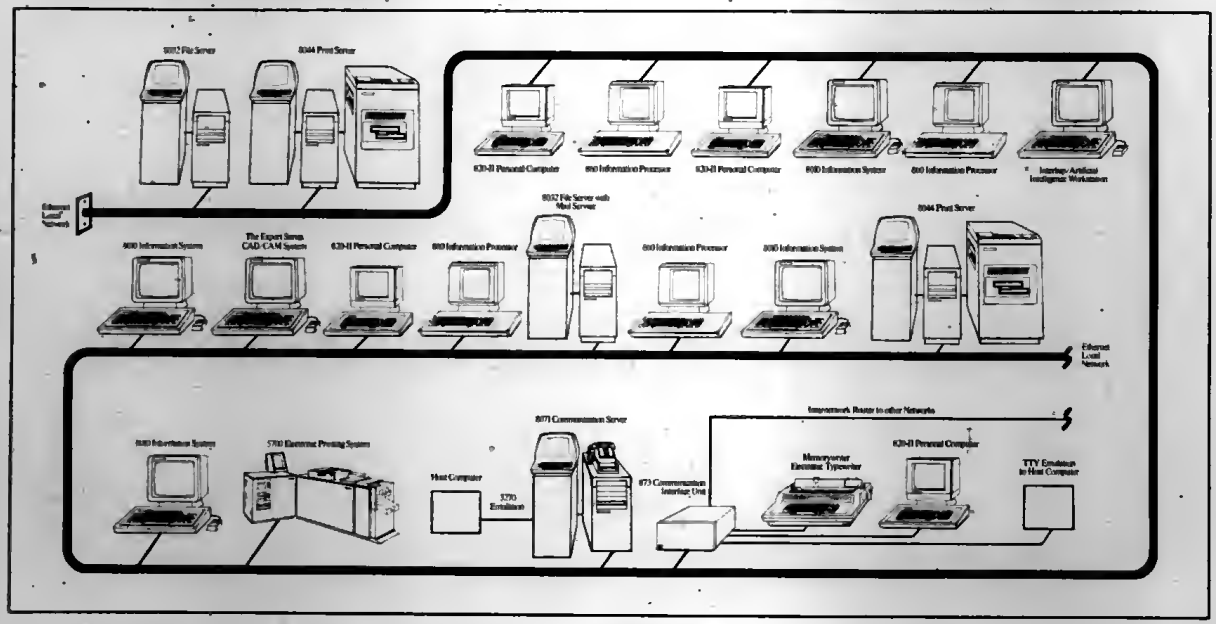

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Harris WP Exec Puts Accent on Function

By Bruce Hoard
CW Staff

ANAHEIM, Calif. — "The word processing package is just another application among various things that can be used in the office," Jim Oyler, vice-president and general manager of Harris Corp.'s Word Processing Division, said in an interview during a recent conference here.

Oyler predicted there will be a decline in the number of companies offering straight word processing systems, but he maintained that the market for those systems will survive.

Multifunctionality is the wave of the future for most word processing companies, he said, citing recent product introductions from NBI Corp. as an example. However, the change to multifunctionality may not come easily to some word processing companies with 8-bit architectures, he added.

Oyler listed Wang Laboratories, Inc., IBM and Digital Equipment Corp. as Harris' strongest competitors in the near future. He said DEC has the necessary "horsepower" and a variety of well-integrated devices. In contrast, IBM lacks that same integration among its office automation product family, he observed. Data General Corp. is not yet on a level with DEC and Harris because it is not strong in end-user software, he claimed.

Establishing Standards

IBM may lack integration, but it still packs lots of market clout, the vice-president said. "I think the big shakeout is coming when IBM announces its local-area network and [private branch exchange (PBX)]," he said, adding IBM will then establish defacto standards that the rest of the communications industry can adhere to.

As far as office automation strategies are concerned, IBM stands alone with its mainframe-driven 3270 CRT terminal approach, he pointed out. That strategy is a viable one as long as its end-user products are good and the incompatibility problems are addressed, he added.

However, the distributed data processing approach favored by Harris, DEC and others is growing in popularity , he said, noting it leans on personal computing and other "single-function" devices such as data base seryers.

Oyler claimed Harris is working from particularly strong DP and communications bases, citing hit company's PBX, which has a data add-on feature to complement its voice transmission capabilities. He admitted Wang is stronger in word processing, but added Harris' recently introduced 9000 series is aimed at reducing that gap.

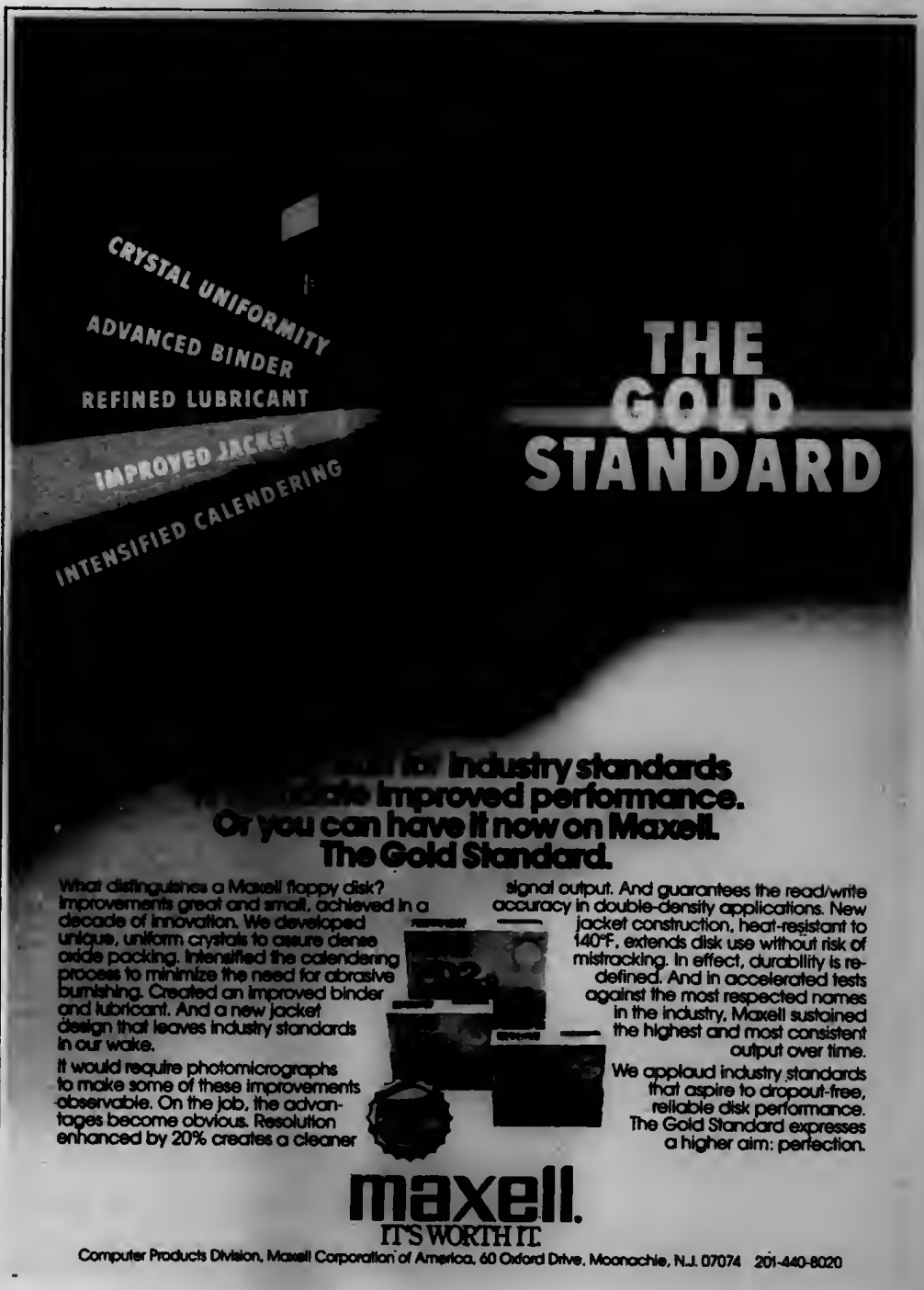
According to Oyler, the biggest impediment to the proliferation of multifunction office automation is the uncertainty potential users have toward it. The vice-president was himself uncertain about the future of

'I think the big shakeout is coming when IBM announces its local-area network and PBX.'

American Bell, Inc. in the office automation marketplace. Noting the new firm is strongly dependent on its American Information Systems (AIS)/Net 1000 intelligent packet-switching network, he said that product has been around for more than five years without being successful.

He said IBM's Document Content Architecture (DCA) encompasses the top two layers of the International Standards Organization's proposed Open Systems Interconnect architecture. Those two layers cover such items as control characters embedded in documents and the rules that say how a document is structured.

DCA is important to non-IBM office automation vendors because it describes such IBM software as Distributed Office Support System. Oyler said once DCA specifications are made public, Harris and other companies will emulate them.



Supershorts

Apollo Computer, Inc. has donated 30 engineering workstations valued at approximately $600,000 to Brown University's Department of Computer Science.

• • •

Sperry Corp. has acquired world rights for the maintenance management application software system that was developed at the Swedish State Power Board's Forsmark and Ringhals nuclear power plants in southern Sweden.

• • •

Videotex America has signed an agreement with ***The Washington Post*** for a joint venture to study videotex operations in Washington, D.C., Maryland and Virginia.

• • •

International Security Technology, Inc. (IST) has reacquired all marketing rights to the risk analysis and management software system which had been marketed for IST by **Pansophic Systems, Inc.** since 1980.

• • •

Burroughs Corp. has opened its new $23 million training center in the Chicago suburb of Lisle. The facility, located on a wooded 20-acre site, includes classrooms, computer laboratories, housing for 450, a restaurant, swimming pool, tennis courts and gymnasium.

• • •

Gould, Inc. has signed an agreement in principle with **Intel Corp.** to manufacture and sopply an uninterruptible power system for Intel's Fast-3825 semiconductor disk system.

• • •

Digital Research, Inc. will support **Visicorp's** Visi operating environment as a standard for its CP/M operating system products. Under the terms of the agreement, Digital Research will work with personal computer manufacturers to adapt Visi software for its CP/M operating systems.

• • •

Wang Laboratories, Inc. has reached an agreement with **Peachtree Software, Inc.** for the exclusive marketing and distribution rights to nine Peachtree business applications packages for the Wang Professional Computer.

• • •

Voicemail International, Inc. and **Digital Equipment Corp.** have signed an agreement to market jointly Voicemail Internstional's voice processing products in conjunction with DEC's PDP-11 and VAX-11 systems.

• • •

Philips Information Systems, Inc. has announced a plan to donate more than $500,000 worth of office automation system equipment to educational institutions throughout the U.S.

• • •

Hewlett-Packard Co. has consolidated responsibility for personal computer and office software into two new divisions. The first division, Personal Software Division, based in Sunnyyale, Calif., will be responsible for internally developed and third-party software products. The other division, the Office Productivity Division, based in Pinewood in the UK, will have responsibility for word processing and office automation products.

• • •

Anacomp, Inc. and **Cullinet Software, Inc.** have signed a letter of intent to market jointly a new version of Anacomp's retail banking software, CIS.

• • •

C. Itoh Electronics, Inc. and **ACM, Inc.** have announced a joint agreement for the design, development, production and marketing of an IBM 3178/3278 plug-compatible terminal.

• • •

Bell Laboratories will produce versions of its Unix System V for **Intel Corp., Motorola Semiconductor Products, Inc.** and **National Semiconductor Corp.** microprocessors. The versions will be owned by Western Electric, and the individual companies will provide support and maintenance service for their respective versions.

• • •

Infocorp has introduced its Microsystems Segment Analysis Service, which provides ongoing research and analysis of the microsystems market. The analysis service examines hardware and software sales, vendor support, dealer and vendor merchandising and distribution strategies.

• • •

The data base and data communications components of **Cullinet Software, Inc.'s** IDMS will be used as the supporting software for all of **Value Computing, Inc.'s** software products under terms of a recent joint agreement.

• • •

Yates Ventures has announced publication of "The Pick Operating System: Markets and Strategies." The report includes company profiles and strategies, market size, projections for future growth and detailed product specifications. Subscription information can be obtained from Suite 111, 4962 El Camino Real, Los Altos, Calif. 94022.

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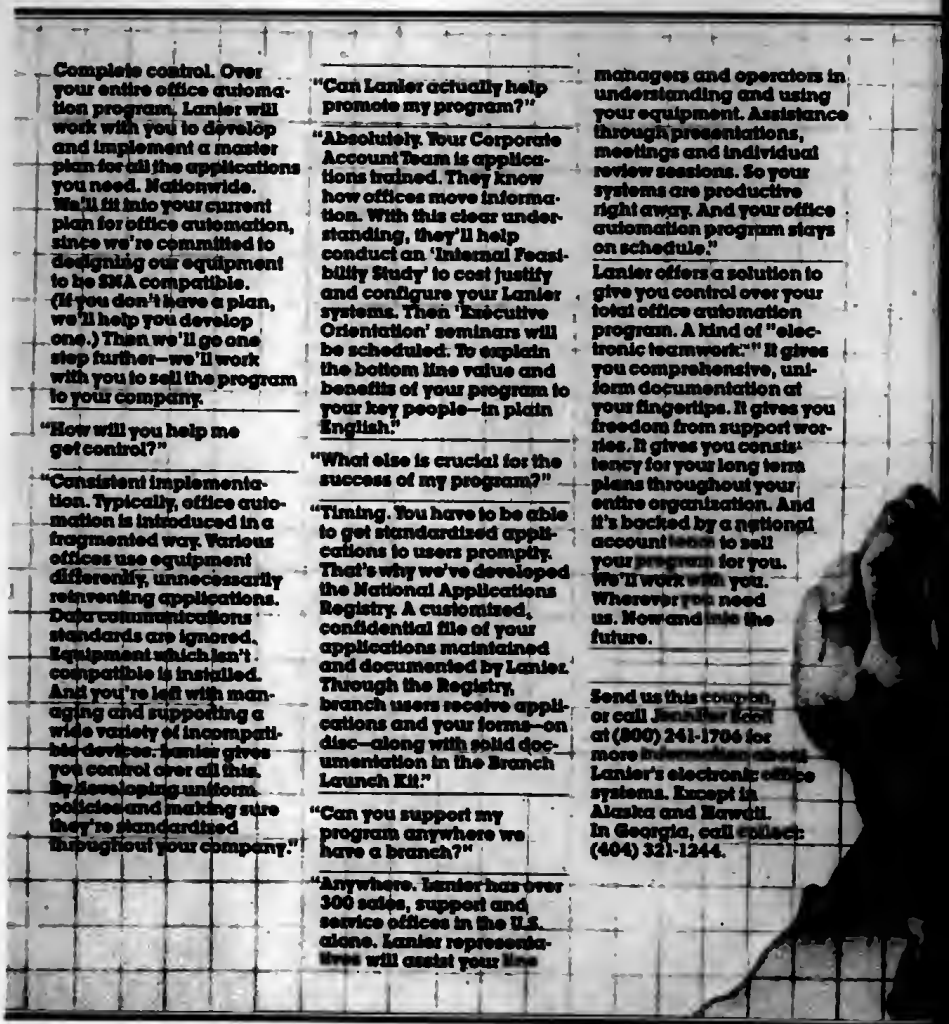

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Candle Exec Says Performance to Remain Issue

By Lois Paul
CW Staff

ANAHEIM, Calif. — Performance issues are not fading away with the advent of fourth-generation languages and microcomputers.

Martin J. Sprinzen, vice-president of technical services for Candle Corp., said in an interview at a recent conference here that performance is even more of an issue at present, as evidenced by products such as IBM's MVS/XA.

Products are not just assisting in performance, but also in availability, Initial Program Load and education, which are key areas, he said. "People learn about MVS and IMS by using our products." He referred to offerings such as Omegamon/MVS and Omegamon/CICS, which the six-year-old Candle Corp. has been developing to monitor performance in these IBM environments.

"MVS is going to be around for a while," he said of the IBM operating system. Although he agreed with the goals of fourth-generation languages, Sprinzen said he feels these products will exist alongside large production systems such as IBM's CICS, MVS and IMS.

IBM already has developed productivity aids to make application development faster and to reduce the program backlog, he said. These aids are working in conjunction with microcomputers running decision support systems that are extracting data from IBM IMS and other large mainframe data bases.

"These large host applications are going to grow," he predicted, citing the banking industry as an example of where this growth will occur. However, IBM will have to address certain issues, he said, and more of the processes will have to be automated.

Sprinzen said he foresees Candle Corp. actively selling its performance monitoring tools for large-system IBM environments throughout the next 10 years. "I am certain that in my lifetime these types of products will go away, but not by 1993," he said.

As artificial intelligence techniques become more prevalent in the distant future, companies like Candle will look to other areas. Sprinzen identified office automation as one such area for his firm.

He sees office automation as "still a little blue sky" at present, but claimed that voice interpretation will give office automation a big boost. It will enable a chief executive officer, who cannot and will not type, to take advantage of office automation applications such as electronic mail and word processing.

Thus, voice interpretation is an area Candle is exploring, Sprinzen said.

Asked if his firm would be following the trend for mainframe software vendors to move into the microcomputer arena, Sprinzen said, "That's why I'm here."

"Control." Reg Parker, Director, National Accounts Marketing, Electronic Office Systems Division

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Report Studies Voice Mail Mart

NORWALK, Conn. — Once they are on their own next Jan. 1, the Bell operating companies will help push a stagnant voice store-and-forward market past the $1 billion level by the early 1990s, according to a recent report.

"Store and Forward Voice Switching," a report from International Resource Development, Inc., claimed the Bell operating companies will license AT&T's VSS technology and offer it as a part of their regular telephone service.

Similarly, the study found that other telephone industry vendors, most notably the other common carriers, will earn significant revenues in the voice mail market within 10 years. Citing current inroads being carved by these companies, the study urged the other common carriers to institute voice mail service before divestiture moves very far along "in order to increase pressure on AT&T without increasing pressure too greatly on profit."

According to the report, the long-term success of voice mail is securely tied to the concept of functional integration.

"Store and Forward Voice Switching" is priced at $1,485 and is available from International Resource Development, 30 High St., Norwalk, Conn. 06851.

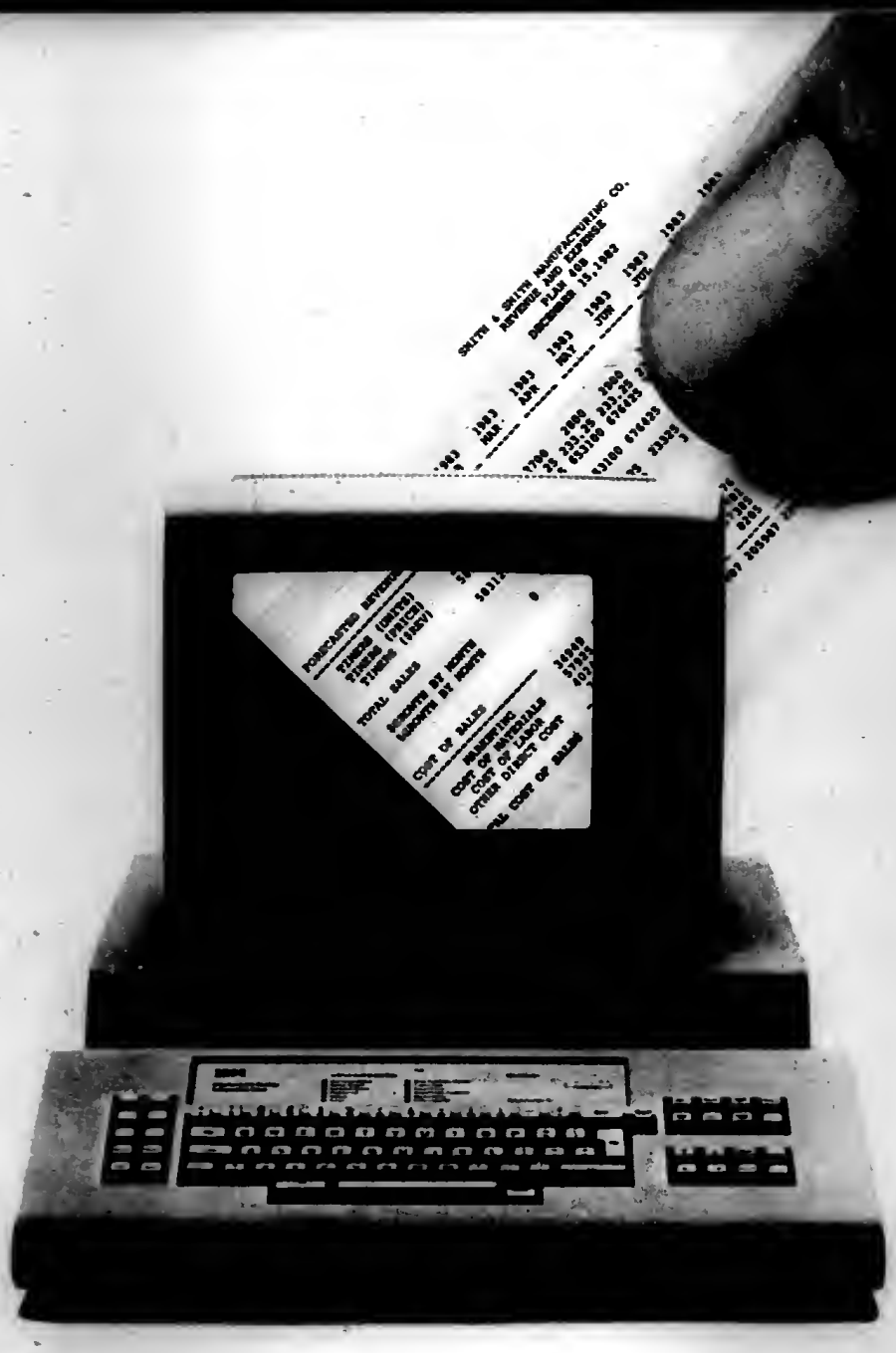
Orders & Installations

Honeywell, Inc. has installed a DPS 7/45, valued at $703,000, at Griffiths Laboratories in Chicago.

Mohawk Data Sciences Corp. has sold more than 50 MDS Series 21 systems to Waddell & Reed, Inc.

CPT Corp. has been awarded a $16 million, 5-year office automation contract by the Tennessee Valley Authority, Chattanooga, Tenn.

M/A-COM DCC, Inc. has contracted to supply 15 digital satellite communications earth stations to Argo Communications Corp. and 10 earth stations to Time, Inc.



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The Displaywriter also provides 3270 data stream compatibility and, for VM/370 users, access to the IBM Professional Office System (PROFS). With PROFS, documents can be filed, retrieved and distributed to other Displaywriters, 3270s, or IBM Personal Computers. PROFS also offers calendar scheduling and administrative services for managers, secretaries and other professionals.

What IBM has done, with this latest addition of data, is simply to make the Displaywriter even more indispensable.

To arrange for a free demonstration of the Displaywriter, call your local IBM representative or IBM's toll-free number listed below.

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Call *IBM Direct* 1 800 631-5582 Ext. 90. In Hawaii/Alaska, 1 800 526-2484 Ext. 90.
Or write to IBM, DRM, Dept. OC90, 400 Parson's Pond Drive, Franklin Lakes, NJ 07417.

*UCSD p-System is a trademark of the Regents of the University of California. **UCSD Pascal is a trademark of the Regents of the University of California.

Zilog Marketing Director Sees Change in User Needs

By Robert Batt
CW West Coast Bureau

ANAHEIM, Calif. — An increasing demand for access to information coupled with the requirements of local processing will result in significant changes in application and buying patterns on the part of users.

This was the view expressed by Eric Doka, director of marketing for the General Systems Division of Zilog, Inc., in a recent interview here.

Doka claimed the emergence of the 32-bit "supermicros" will mean that functions such as graphics and engineering capabilities, currently being performed on minicomputers, will be available at much reduced prices.

The main function of 32-bit micros, he asserted, will be data management. They will store, organize and move large blocks of data from the mainframe to workstations and local intelligent data bases. These data management functions may be very complex in environments where the data bases are spread over multiple servers, he added.

Users in large organizations will migrate from minicomputer technology to micros in large organizations, provided that the investment they have made in software is protected, he said. As a result, software migration tools will increase in importance.

"Users will need to have the capability to move minicomputer software to the microprocessor machines with little or no modification to code required and where applicable, the ability to transfer data directly," Doka asserted.

The Zilog executive argued that the key factor in such developments will be the emergence of generally agreed-upon standards. "What's been missing to date is established standards in the 16-bit and even the 32-bit mini/micro market."

In this regard, he added, the Unix operating system will dominate the small systems market. Pick & Associates Pick operating system and a multiuser, multitasking version of Microsoft, Inc.'s MS-DOS will be other contenders for small systems operating software dominance, he predicted.

He concluded: "Despite these developments, I do not believe the 32-bit market is going to replace the 16-bit. Both of them will place themselves comfortably around applications for which they happen to be well suited."

DBS Conference Set for Sept. 12

WASHINGTON, D.C. — Programming and financing direct broadcast satellites (DBS) will be the subject of the third annual DBS Conference scheduled for Sept. 12-13 here at the Madison Hotel.

Sponsored by Phillips Publishing, Inc. in conjunction with the law firm of Schnader, Harrison, Segal & Lewis, the conference will focus on issues facing direct broadcast satellites. DBS, which do not yet exist in commercial applications, operate at different frequencies and at increased power to allow users to receive information via smaller (about 2-ft) earth stations.

Industry programming experts will be on hand to address: what programming will sell on the satellite-to-home market, demographic issues and whether there is a market for U.S. programming on European DBS systems, according to Phillips Publishing.

The conference costs $495. For more information, contact Diane Pontisso at Phillips Publishing, Suite 1200N, 7315 Wisconsin Ave., Bethesda, Md. 20814.

Executive Corner

• **James C. Nitz** has been named vice-president of computer-aided design and manufacturing marketing and **Hugo P. Cannizzaro**, vice-president, Western U.S. operations, at Prime Computer, Inc.

• **Michael J. Lindseth** has been elected vice-president, treasurer, and **Greg Barnum**, corporate controller, at Cray Research, Inc.

• **Carlton B. Crenshaw** has been appointed vice-president, financial planning, and **Edwin P. Gilbert**, vice-president and controller, for computer systems, Sperry Corp.

• **Patrick B. Brennan** has been promoted to corporate vice-president, treasurer, and **J. Phillip Russell**, corporate vice-president, controller, for National Semiconductor Corp. **Louis Orsatti** has been named vice-president and general manager of the DTS Division of Datachecker/DTS Corp

• **Harold E. Edmondson** has been elected vice-president of manufacturing at Hewlett-Packard Co.

• The following individuals have been elected corporate vice-presidents of Wang Laboratories, Inc.: **Eugene M. Bullis**, corporate controller, **Raymond C. Cullen**, marketing services; **Robert L. Doretti**, U.S. operations, **Edward D. Grayson**, general council and corporate secretary; **Robert S. Kolk**, development; **J. Carl Masi**, international operations; **Johannes Spanjaard**, secretary to the executive operations committee, and **Horace Tsiang**, development.

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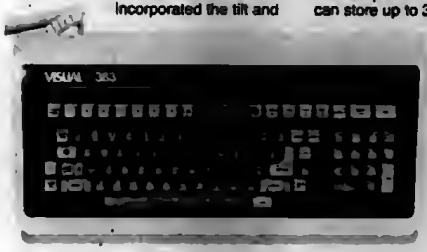
Data Access System, Inc. is proud to introduce the Visual 383 from Visual Technology, the latest in state-of-the-art Burroughs TD830 emulation.

We selected the Visual 383 because of its exceptional features compatible with Burroughs TD830 escape codes.

Features. Visual incorporated the tilt and swivel design for more operating comfort and increased the green P31 phosphor screen to 14" for better clarity of its 9 x 7 character formation.

But looks aren't everything. What's inside puts the Visual 383 way ahead of the competition...

The selectric typewriter style keyboard with n-key rollover and sculptured keycaps has been engineered with 'capacitive-scan' technology.



They approached programmability with the same high standards. Other emulators offer you 6 or 7 programmable function keys, the Visual 383 has 16. In fact the ENTIRE keyboard can be reconfigured to meet your exact needs with all soft keys and configured screens password protected. Plus you can store up to 350+ bytes in non-volatile memory.

And designing special applications is a lot easier with the Visual 383 because the internal buffers for screen, data communications, soft keys, printer ports and local forms can be modified according to YOUR requirements.

Data communications—how could it be made faster when complex screen formats have to be repeatedly transmitted from the host? Easy, just download user screens to the terminal's forms memory for fast recall, at any time. The Visual 383 supports all standard Burroughs data communications modes including poll, select, fast select, group poll, group select, broadcast select and contention modes.

The Visual 383 line monitor mode enables you to quickly identify communications and system problems. You can assign one of the 6 standard pages of user memory to the 'line monitor page' for greater analysis capabilities.

It even supports two different polling stations so data entry and printing can take place concurrently. And the separately polled printer port supports both XON/XOFF and PRINTER BUSY allowing you to use ANY serial RS232 printer.

Support. But the best system design in the world is only as good as the service and personal attention supporting it. At DASI we provide customized system support and fast response to your service needs—on-site, return-to-depot or board swap, from our 22 locations across the country. Our flexible financing, lease and rental programs help you keep within your budget plans.

Price. You usually get what you pay for. But with the Visual 383 you get a lot more. More features, more flexibility, AND more support.

The Visual 383 is compatible with the Visual 420 Burroughs SR100 and SR110

FEATURES	VISUAL 383	[illegible]	[illegible]	[illegible]	[illegible]
Screen Type	14" Green P-31	12" Green P-31	12" Green P-31	12" White P-4	12" Green P-42
No. of Pages Standard	6*	2	2	8*	4*
Password Protected Set-Up Functions	6	3	None	None	1
XON/XOFF Printer Support	STD	NO	NO	NO	STD
Host Accessible Local Forms Storage Buffer	STD	NO	NO	NO	NO
Function Key Storage	Non-Volatile RAM with Battery Back-up	Non-Volatile RAM with Battery Back-up	—	Non-Volatile RAM	Non-Volatile RAM
Completely Reconfigurable Keyboard	STD	NO	NO	STD	NO
User Configurable Page, Data Comm, Softkey Buffers	STD	NO	NO	STD	STD
Time of Day Clock	STD	STD	NO	NO	STD

*VARIABLE PAGE BUFFER (with adequate Data Comm, soft key and printer buffer)
Products Comparison as of May

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For the manager/professional, NBI word processing is so easy to learn and use that you will find yourself capturing all your notes and thoughts on your personal computer. You can incorporate results from PC applications, such as spread sheets, into memos and reports. You can even communicate documents from your PC to NBI's OASys line of office automation systems for further editing, revision or printing.

For the writer, NBI word processing with its document orientation helps provide both flexibility and an uninterrupted creative flow, with features like editing during initial text entry, scrolling from page to page, multiple formats within a document, the ability to move, store and insert text and on-screen information that shows the writer what the document will look like when it comes out of the printer.

For the secretary, it makes keeping track of documents easier with a directory containing document descriptions, page length, and date of last revision...it makes the updating of address lists easier and allows

these lists to be used with form letters, lets you use the PC as a simple typewriter and it can actually print one document while another one is being typed or revised.

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- NBI word processing gives you both overstrike and insert text editing capabilities.
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- NBI offers scrolling through pages with clearly marked page boundaries.
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For more information about NBI Word Processing for the IBM and COMPAQ personal computers, go to your nearest ComputerLand store, or write: NBI, Inc., P.O. Box 9001, Boulder, Colorado 80301...or just call us toll-free **1-800-NBI-1111.**

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Corona Chairman: IBM Micro Market Secure

By Robert Batt
CW West Coast Bureau

ANAHEIM, Calif. — The software-compatible market for the IBM Personal Computer will not suffer the same problems as IBM's competitors in plug-compatible manufacturing (PCM), according to Robert Harp, chairman of Corona Data Systems, Inc.

In a recent interview here, Harp said the volume of IBM software written by independent software houses will provide a safety valve for those companies competing against IBM in the microcomputer field.

"Hundreds of software vendors have jumped on the IBM Personal Computer software bandwagon, including heavyweight application software manufacturers," Harp said. "Unlike the PCM field, this means that IBM has little control over independently developed software, which gives smaller manufacturers a measure of security."

IBM, he claimed, has set a standard for 16-bit personal computer systems. Because its competitors in this market need not be code-compatible, the market has relatively easier points of entry than the Apple Computer, Inc.-compatible market, where would-be competitors must be wary of copyright laws, he said.

Harp estimated that 100,000 IBM Personal Computer look-alikes will be sold this year, with this total doubling in 1984. Corona was formed in 1981 to develop products for the personal computer marketplace and late last year announced a family of personal computers designed to be compatible with software packages and expansion cards for the IBM micro.

At the recent National Computer Conference, Harp announced that Corona had inked a contract with Xerox Corp. by which Xerox will provide service and support to Corona products. The deal is part of an on-site program designed in part to provide an opportunity for the smaller personal computer vendors to market their products among the top Fortune 1,000 companies. Xerox is expected to announce contracts with other personal computer vendors in the near future.

"The major attraction of selling to Fortune 1,000 companies and large institutions is the often immense volume of sales possible in even a single transaction, but it requires mandatory on-site service and end-user support forces," explained Daniel Carter, Corona's president.

Dr. Robert S. Harp

CIG to Analyze Organizations, Environments

PALO ALTO, Calif. — The Company Intelligence Group (CIG) has been established here to specialize in customized competitive analysis studies for single clients in the computer and communications industries.

CIG does not accept conventional market research or consulting assignments. Instead, its focus is on the structure, actions, strategies and behavior of organizations.

The group offers coverage of U.S., Japanese and European companies and of markets using English, French, German, Spanish and Japanese languages. Coverage of political and government policy developments affecting competitive environments is also available.

More information is available from Suite 209, 535 Everett Ave., Palo Alto, Calif. 94301.

Mergers & Acquisitions

Fared Robot Systems, Inc. of Denver has reached an agreement in principle with **Automated Robotic Systems, Inc.** (ARS) of Dallas for the acquisition of ARS by Fared through the exchange of common stock.

Nickels & Dimes

Datapoint Corp. has announced that revenue for the third quarter ending April 30, 1983 totaled $136.4 million, with net earnings of $1.5 million or 8 cents per share, compared with revenue of $99 million and a net loss of $22.9 million or $1.14 per share for the same period last year.

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Best of all, perhaps, the microSystem 6/10 will be an immediate hit with employees wed to their PCs. Because it accepts popular software packages based on CP/M-86® and MS-DOS,® chances are your people won't have to give up their favorite programs.

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'When You Said You Were Getting It From A Dealer Who Would Stand Behind It, I Thought You Meant...'

Management Workstations Seen Boosting Graphics Mart

MEDFIELD, Mass. — After years of struggling with dedicated graphics terminals and high-cost presentation systems, business graphics users are now discovering the advantages offered by management workstations, as the vast market for computer business graphics is realizing its potential, a study has found.

"Management Workstation Graphics" by Advanced Resources Development, Inc. claimed that these workstations will be the primary factor in boosting the business graphics market to over $10 billion by 1987, as compared with the 1982 level of $1.3 billion.

According to the report, dedicated graphics terminals and presentation systems will continue to be in demand for market sectors requiring high-volume and high-quality graphics.

However, the report continued, the driving force in the business graphics market will be the integration of graphics capabilities with multifunctional distributed computing based on management workstations.

No one company has yet emerged as the leader in management workstation graphics for the business market, the study noted, although a multitude of management workstation products capable of bit-mapped graphics have recently been introduced.

Vendors such as Digital Equipment Corp., Texas Instruments, Inc. and Wang Laboratories, Inc. have announced professional workstation-type computers having graphics capabilities as part of their individual strategies for penetrating the office automation market.

Traditional mainframers such as Burroughs Corp., NCR Corp. and Honeywell, Inc. have also announced professional workstations, and Sperry Corp. is expected to follow suit later this year, the report predicted.

Management workstations with distributed graphics processing will account for nearly half of the business graphics market in 1987, the report added.

Microcomputers used on a stand-alone basis will continue to capture a significant portion of the business graphics market, but will lose market share to management workstations, dropping from 34% in 1982 to 27% in 1987, the study continued.

"Management Workstation Graphics" is priced at $1,695 and is available from Advanced Resources Development, 28A Park Street Station, Medfield , Mass. 02502.

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SSI quality is proven by seven years in the field. We lead in speed, too: our new Mercurion 1 non-impact printer goes 5280 lines a minute. As for service, we now offer the SSI team of specialists plus the full clout of TRW. So there's no reason to hesitate. Call us or mail the coupon for the full story.

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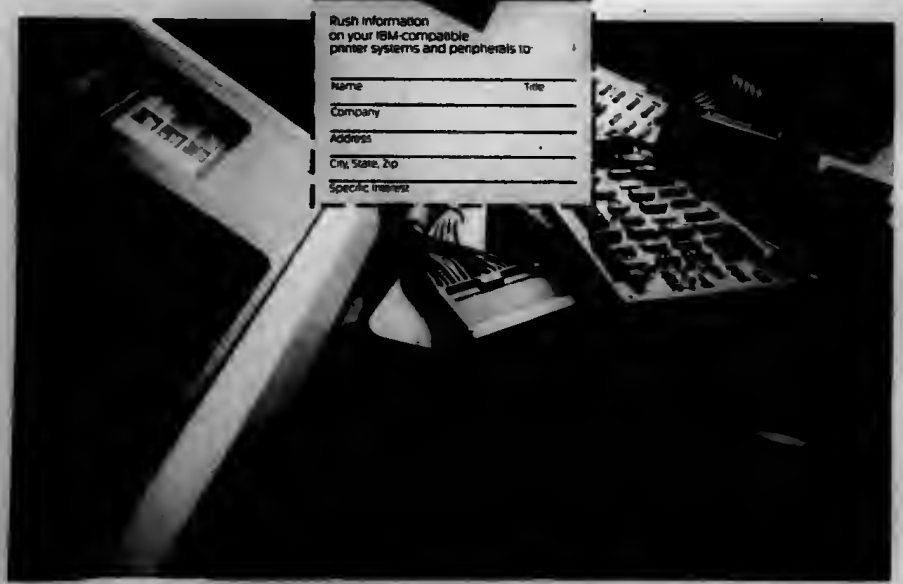

Harris to Focus On DOD Tech

MELBOURNE, Fla. — Harris Corp.'s Government Systems Sector has formed a Very High-Speed Integrated Circuit (VHSIC) operation to help the company focus its resources on this Department of Defense (DOD)-related technology.

VHSIC has been named by the U.S. Defense Science Board as the primary technology that can enhance U.S. defense capabilities.

According to Harris management, three key issues will be emphasized in applying the semiconductor technology: an automated system for rapid design and performance prediction of complex chips; radiation-hardened Cmos products; and the insertion of standard VHSIC chips into major Defense programs.

The Government Systems Sector is already a participant in the DOD's VHSIC program, teaming with Westinghouse Corp. and National Semiconductor Corp. on the development of a VHSIC chip set for the U.S. Air Force.

Agency Invests $5 Million to Train Temps in WP

By Marguerite Zientara
CW Staff

MILWAUKEE — In an effort to meet the automated office head-on, the largest temporary employment agency in the world has invested 2½ years and $5 million in acquiring new technology and developing new training methods.

Part of Manpower, Inc.'s plan has been to institute a word processing training program that translates the usual "computerese" into "street talk" — a project that has cut training time from the traditional five days to six hours, according to President and Chief Executive Officer Mitchell S. Fromstein.

"We're really getting ready to convert in one year a reserve work force or pool of people now working for us with regular office skills — about 150,000 people — to the skills needed in the automated office," Fromstein said.

"We'll give them hands-on familiarity, and then we'll use the same techniques for upgrading skills, cross-training skills and adding new skills as they come out technologically," he added.

Inspired by Research

What inspired Manpower to upgrade its workers' skills? "To begin with, we had a research team look at the market for us.

"Their conclusions were that this was going to be an exploding market as soon as the recession was over, and that an ever-increasing share of our business for temporary help would be coming in the areas of word processing and data entry," he said.

Fromstein foresees a four-fold increase in the number of WP workstations by 1985, as compared with figures from 1980. By 1990, the number is expected to reach 17.5 million, he said.

"So it really was a matter of market necessity that we addressed ourselves to the problem," Fromstein maintained.

A task force looked at all the possible ways of training, including using the vendor schools, vendor manuals, Manpower's own schools and using equipment vs. using no equipment.

"Just by the process of elimination, we got down to the painful bottom line that there's no shortcut, that you just must go out and buy the equipment and put it in," he said.

Manpower is currently equipping 500 of its U.S. offices with disk-based WP workstations, mainly from IBM and Wang Laboratories, Inc.

International efforts are also under way, with the training programs now translated into French, German and Spanish, Fromstein indicated.

"The idea of a disk, of course, is nothing new," Fromstein observed, "but what I think is really new and unique about [our program] is the fact that we have a uniform training methodology for every machine, and that doesn't exist anywhere.

"That took us a year to develop," he noted, "in other words, to take the training matrix of the IBM Displaywriter and of the Wang [OIS or WPS] system and make them essentially the same in terms of the giving and teaching of information."

Because IBM and Wang, as competitors, naturally do not attempt to integrate their products with each other's, one might wonder about their reactions to Manpower's project. "They have been extremely supportive of what we're doing," Fromstein said, adding, the vendors "have a lot to gain.

"If we make our goal and train 150,000 operators for those two pieces of equipment, they're going to have a lot of the operator-supply problem solved, and I think they know that," he said.

"Secondly, we were very careful to be technically perfect with all of this," he added. Furthermore, Manpower's objective is slightly different from the vendors'.

Manpower concentrates on such things as document preparation, editing, printing and merging — skills that are not only readily needed by firms seeking temporary help, but that are also learned quickly.

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In five 20-30 minute color video sessions, you'll hear from industry experts FCC Chairman Mark Fowler, American Bell/AIS President Arch McGill and Dr. Dixon Doll, along with others, sharing their insights on topics such as short-haul microwave, PBX technology, communications processors and satellite technology.

Local Area Networks: The Major Considerations.
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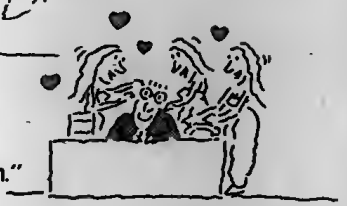

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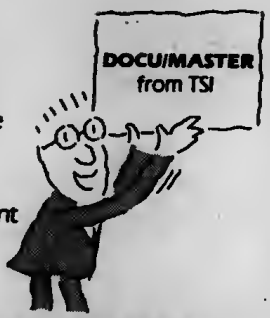

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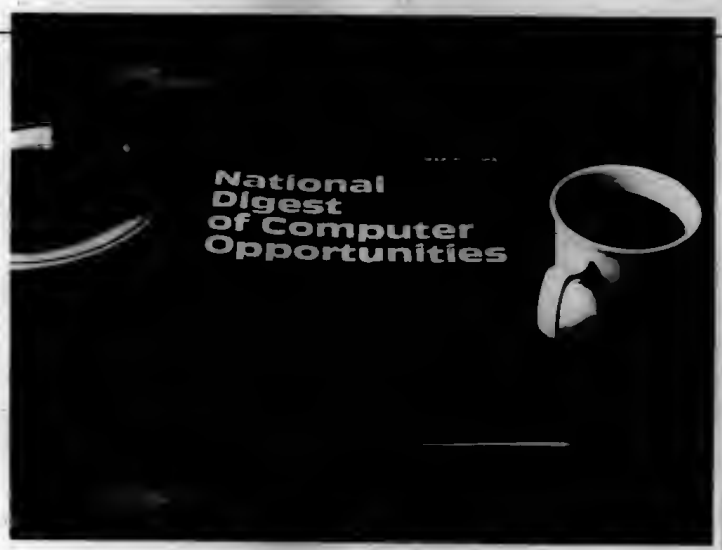

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Manager, Technical Information Management Services

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Your 4-6 years data processing experience with a minimum 3 years in analysis and design is needed to qualify for these opportunities. Project management and tech writing experience is required and 2 years IMS DEC RSX 11 M experience is preferred. We are also looking for individuals with CPCS experience.

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SENIOR PROGRAMMER ANALYSTS

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First City Bancorporation of Texas, Inc

DATA PROCESSING PROFESSIONALS

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MACHINE OPERATION SUPERVISORS
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Experienced Diagnostic Engineers wanted for design and implementation of diagnostic and test software. Applicant should have a working knowledge of hardware logic and schematic analysis. Experience in writing test software in both Assembly and high-level languages is required. Experience with 'C' is desirable.

Software System Support Engineer

Design, develop and maintain software for the 38-bit array processor. Experience with operating system internals and I/O device drivers. Emphasis on Motorola 68000, VAX, PDP11 and Data General. Requires degree in Computer Science or equivalent technical discipline.

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INSTRUCTOR-BUSINESS AND DATA PROCESSING

Charles County Community College, a comprehensive public community college located in beautiful Southern Maryland invites applications for a full-time Business and Data Processing Instructional position. This position becomes effective with the Fall Semester which begins August, 1983.

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— and —
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Programmer Analysts with 2 years experience programming in a VM/CMS environment.

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Data Processing
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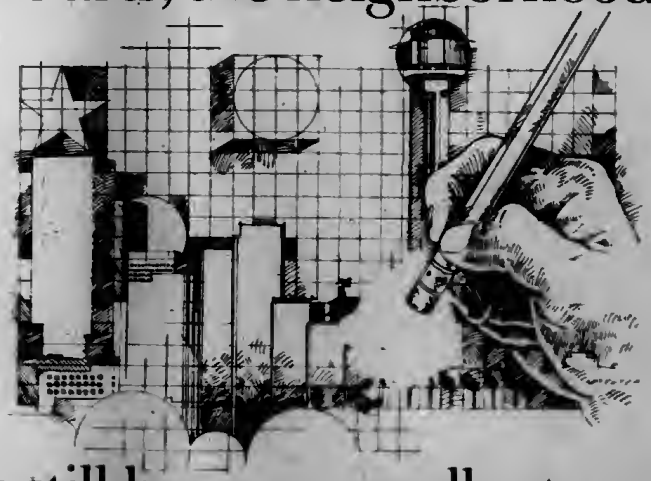

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- Communications software
- Operating systems
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Includes both assembly and FORTRAN Language Applications. B.S. in EE, Math or Computer Science with 3 or more years experience required. Will also consider recent graduate with a high grade point average and one of the above stated degrees.

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— 2 to 4 years in software systems testing plus enough software development experience for:
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- Generation of test plans/procedures
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B.S. in Computer Science or Math required.

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— Emphasis on real-time distributed data acquisition/processing systems

- PERKIN-ELMER 3230 NETWORKS
  —UNIX —SNA
  —PDL81 —FORTRAN
- VAX 11/750 to VAX 11/730 NETWORKS
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  —PDL —FORTRAN
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— Must have ability to lead technical support function in a service oriented, controlled environment. Must be experienced in:
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Prefer 8 or more years technical experience.

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— Must have ability to control network configurations to meet service level requirements.
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Prefer 4 or more years technical experience.

— Will control all phases of data storage administration in an MVS environment and experience in:
  — Data base installation, definition, and maintenance (IDMS or ADABAS)
  — Data security (RACE or ACF2)

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SOFTWARE - MVS-SP1, ACF/NCP, ACF/VTAM, MSNF

IBM SYSTEM SOFTWARE SPECIALIST
Position requires a minimum of three (3) years experience in support of large mainframe IBM or compatible computers using latest IBM Software. Must be able to perform SYSGEN s, apply maintenance and trouble shoot system problems. Assembly language proficiency mandatory.
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SOFTWARE - MVS-SP1, ACF, VTAM, NCP, TSO/SPF, CICS, VS/COBOL, VS/FORTRAN, RACF

SPERRY (UNIVAC) DATA BASE SPECIALIST
Position requires a minimum of two (2) years experience in technical support of Sperry IMS-1,100 software. Must be able to perform DMS-1100 SYSGEN s, apply maintenance and local code, and trouble shoot. Proficiency in Sperry 1100 Assembler language required.
HARDWARE - SPERRY 1100/83, 8433, 8450, 8470, U-36
SOFTWARE - OS/1100 Release 38, DMS-1100 Release 8R2 going to 8R3 with integrated recovery

COMMUNICATION SPECIALIST
Ability to trouble shoot async and sync circuits supporting DEC PDP and VAX processors, and IBM and Univac large scale computers using in-line and portable monitoring equipment. Protocols in use are: DEC VT 100 and LA 120, IBM Bi-sync, SDLC, SNA, Univac UTS 400/4000, NTR, UDLC, DCT-1100, TTY. Modems include limited distance and long haul equipment. Recent college graduate with an EE or MIS degree and a strong interest in Communications will be considered.

SPERRY (UNIVAC) SOFTWARE SPECIALIST
Position requires a minimum of two (2) years experience in support of Sperry 1100/8X-6X system. Must be able to perform SYSGEN s, apply maintenance and trouble shoot system problems. Proficiency in MASM and COMUS, required. Experience in SECURE, SENTRY, QUOTA, and TSS desired.
HARDWARE - SPERRY 1100/83, 8433, 8450, 8470, U-36, DCP-40
SOFTWARE - OS/1100 Release 38, CMS/R7, DMS-1100 8R2, 8R3, COBOL 5R1

MINI-COMPUTER SPECIALISTS
Specialists needed with two or more years experience with DEC PDP-11 and/or TI-990 Computers in a data processing time-sharing environment. Capabilities should include use of Assembler language, software SYSGEN, local code changes, trouble shooting, BASIC, COBOL and RSTS E operating system.

APPLICATIONS PROGRAMMERS
Individuals should have two or more years experience in COBOL. Experience with Univac 1100-83 hardware and Univac Data Base Management System preferred but not required.

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PRESTO.

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EOE/AA

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The Administrative Applications Coordinator will be responsible for the conversion, design, documentation and maintenance of programs for financial and other administrative records through an on-line, integrated file approach using a relational data base system as a fundamental tool. Additional responsibilities will include some training of administrative personnel in the use of relevant systems.

The Computing Center has a DEC System 1091 operating under TOPS-10 with 2.5 megabytes of memory and 900 megabytes of disk storage. The system serves administrative and academic users through 48 on-line terminals.

The college offers competitive salary and fringe benefits. Send letters of application and a resume before June 22, 1983 to:

Myron Curtis, Director
Computing Center
Bowdoin College
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You will menage four System Programmers responsible for supporting MVS, JES2 end related software running on five Amdahl V8s in the Corporate Computer Center. Your responsibilities will include personnel menegement, project menegement, user interface, planning and budgeting. One yeer's experience in technicel menegement, including personnel responsibility, plus 5 years prior experience in OS/MVS system programming is required. A degree in Computer Science, or equivalent, desired.

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As e System Programmer in our Corporate Computer Center, you will support VM/SP end releted software running on four Amdahl V8s. We heve both intermediete end senior level system progremming opportunities evailable. If you heve e minimum of 2 yeers VM systems progremming experience, including instellation and meintenance, plus experience in Assembler lenguege coding, you mey quetify for one of these rewarding opportunities. A degree in Computer Science, or equivelent, desired.

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Principal Engineer

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Applications, with an appropriate cover letter expressing interest in the position, two copies of a complete resume, and names, addresses and phone numbers of at least three personal references should be postmarked no later than June 25, 1983, and addressed to

Dr. Gary R. Fane, Chairman
Search Committee for Director of Computer Science Division
Academic Affairs
University of North Florida
4567 St. Johns Bluff Road, South
Jacksonville, FL 32216

Provisions of Florida's Government in the Sunshine and Public Records law will be followed. Search Committee meetings and interviews will be open to the public, and all applications, resumes, and other documents related to the search will be available for public inspection. The appointment will be effective August 1, 1983. UNF is an equal opportunity, affirmative action employer. We actively solicit applications from minorities, women and handicapped individuals.

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MS in Computer Science with strong educational background in compiler theory and design. 2 years experience in the implementation of compilers on mini or micro computer systems is a requirement. Responsibilities will include specification planning, design, implementation and documentation of high-level language compilers and Run-Time systems under both industry standard and proprietary operating systems.

Qualified candidates are invited to send their resume and salary histories to: Job Service, order #63407, Elaine Bonham, P.O. Box 1339, Provo, Utah 84603.

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OPERATIONS MANAGER
UNIVERSITY OF WISCONSIN-PARKSIDE

The University of Wisconsin-Parkside needs a creative individual with good organizational skills to manage our computer operations, data control and data entry sections of the Computer Center.
Applicants should have both the leadership and technical abilities and acquired the experience necessary to assume full responsibility for staff supervision and computer operations management.
The computer system includes an IBM 4341 operating under VM in a teleprocessing environment, and a Digital PDP 11/70 minicomputer providing instructional timesharing in a distributed processing environment. Previous experience utilizing IBM equipment, and a Bachelor's degree, preferred.
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The Computer Information Systems Department welcomes applications for a faculty position available September 6, 1983. A Bachelors degree required, Masters preferred. Minimum of three years business data processing experience required. Requires strong interest in undergraduate instruction and ability to teach courses in several of the following areas: Systems Analysis, Programming Languages, Teleprocessing and Data Base Management. Rank and salary will depend upon qualifications and experience. Salary range $25,000-$30,000 for 9 months. Send complete resume to Dr. Stuart J. Travis, Head, Department of Computer Information Systems, Ferris State College, Big Rapids, MI 49307.

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Requirements include a Bachelor's degree or equivalent in computer science or electrical engineering. Background in IBM data communications is essential, specifically in the following technologies: SNA, VTAM, NCP, 3270 devices, and DPPX/RJE 8100.

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You'll develop special system software to integrate HP database and networking products. Development efforts are targeted at 6-to-12 month projects that will provide networking and database solutions to specific customer requests.

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For confidential consideration send a resume, including salary requirements, to Mr. E.D. Smith, Director of Technical Recruiting, **APPLIED DATA RESEARCH, INC.**, Route 206 & Orchard Rd., CN-8, Princeton, NJ 08540.

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Software Quality Assurance Analyst — IBM Business Applications

Establish and administer a systems quality assurance program. Develop standards/guidelines for systems design, programming, testing, documentation and operation for quality, software development and conformity to corporate requirements. Five years minimum experience in systems analysis project management, programming and operations.

Sr. Programmer/Analyst

Project Leader to develop and implement major manufacturing and materiel systems. Candidates must have directly related programming experience and excellent communication skills.

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Develop Corporate Logical Data Plan and each system's logical and physical data views. Candidates must have a minimum of three to five years experience in the areas of Data Dictionary usage, top down design, user view synthesis, entity analysis and normalized and logical data base design. Excellent written and verbal communication skills are mandatory in this position.

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Major scientific projects have created a need for Sr. Systems Programmers/Analysts. All positions require an appropriate degree and directly related systems programming experience. Computer Systems: VAX 11/780 (VMS), Honeywell DPS 8/70 (GECOS), IBM 3033/4341 (MVS), PRIME 559/750 (PRIMOS).

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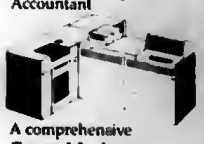

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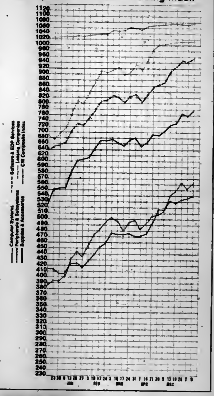

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Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE QUOTES INC Cambridge Mass. 02139

CLOSING PRICES WEDNESDAY, JUNE 8, 1983

E X C H		1982-83 RANGE (1)	CLOSE JUNE 8 1983	WEEK NET CHNGE	WEEK PCT CHNGE
	COMPUTER SYSTEMS				
A	AMDAHL CORP	17- 58	55 1/4	+1	+1.8
N	BURROUGHS CORP	28- 56	54 1/2	+ 7/8	+1.6
O	COMPUTER AUTOMATION	7- 17	14 3/4	- 3/8	-4.0
A	COMPUTER CONSOLES	15- 47	40 1/8	+ 3/4	+1.8
N	CONTROL DATA CORP	21- 59	58 1/4	+1 1/4	+2.1
O	CRAY RESEARCH INC	20- 49	47 1/4	+2 1/2	+5.5
N	DATA GENERAL CORP	20- 73	58 7/8	-1 3/8	-2.2
N	DATAPOINT CORP	11- 38	19 5/8	- 3/4	-3.8
N	DIGITAL EQUIPMENT	85-132	111 5/8	-2 7/8	-2.3
A	[illegible] INC	6- 13	14 1/2	+ 1/8	+0.8
N	ELEC. MEM. & MAGN.	5- 15	14 7/8	+2 7/8	+23.0
A	FLOATING POINT SYST	10- 43	41 1/2	+5 1/4	+14.4
N	[illegible]	22- 47	44	+ 1/4	+0.8
O	[illegible] CORP INC	1- 3	1/4	0	0.0
O	GENERAL AUTOMATION	3- 10	10	- 1/8	-0.8
N	HARRIS CORP	20- 51	42 7/8	- 3/4	-1.7
N	HEWLETT PACKARD CO	36- 90	87 5/8	+3 5/8	+4.3
N	HONEYWELL INC	60-124	114	-2 1/2	-2.1
N	IBM	57-118	113 3/8	+1 1/2	+1.3
N	[illegible] SYSTEMS	5- 12	11 1/2	+2 1/4	+24.3
O	MAGNUSON COMP SYS	2- 5	3	0	0.0
A	MANAGEMENT ASSIST	3- 10	13 1/4	+ 5/8	+4.2
O	MIN. COMPUTER SYST	1- 2	1 7/8	0	0.0
N	MOD COMPUTER [illegible]	6- 16	15	+ 7/8	+6.1
N	MOHAWK DATA SCI	10- 18	13 7/8	- 3/4	-5.1
N	NCR	38-128	118 5/8	+1 1/4	+1.0
N	PERKIN ELMER	17- 33	30 1/4	+1 7/8	+6.6
N	PRIME COMPUTER INC	18- 45	37	-1 1/8	-3.6
N	SPERRY CORP	21- 39	38 1/8	-1 1/4	-3.2
O	[illegible]	14- 34	30 1/8	- 1/4	-0.8
N	TEXAS INSTRUMENTS	71-178	183 3/8	+10	+6.8
A	WANG LABS "B"	13- 42	40	+1 1/2	+3.8
A	WANG LABS "C"	11- 42	40	+ 3/8	+1.5
	LEASING COMPANIES				
N	BOOTHE FINANCIAL CP	22- 45	42 1/2	0	0.0
N	COMDISCO INC	7- 34	33 1/8	+1 5/8	+5.1
O	[illegible] CORP	1- 1	1/4	0	0.0
O	COMPUTER [illegible] GRP	1- 2	1/2	0	0.0
O	CONTINENTAL INFO SYS	7- 25	25 3/4	+2 1/2	+11.2
N	DPF INC	8- 14	13 3/4	+ 7/8	+6.7
O	ITEL	1- 3	1 1/8	0	0.0
O	LEASPAC CORP	1- 2	1/8	0	0.0
N	P.S. [illegible]	19- 47	42	-1	-2.3

E X C H		1982-83 RANGE (1)	CLOSE JUNE 8 1983	WEEK NET CHNGE	WEEK PCT CHNGE
	SOFTWARE & EDP SERVICES				
O	ADVANCED COMP TECH	1- 9	5 3/4	+ 1/4	+4.5
O	ADVANCED SYSTEMS INC	10- 29	28 1/4	+1 1/4	+4.6
O	AGS COMPUTERS INC	7- 26	25 1/4	+1	+4.1
O	AMERICAN SOFTWARE	22- 31	28	-2 1/4	-7.4
N	ANACOMP INC	6- 23	12 7/8	- 3/8	-2.8
O	ANALYSTS INTL CORP	5- 14	14 1/4	+1	+7.5
O	APPLIED DATA RES.	6- 36	33 3/4	+ 3/8	+1.1
O	ASK COMPUTER SYSTEMS	12- 38	25 1/2	+1 1/4	+5.0
O	ASTRADYNE COMP IND	1- 7	2	- 3/8	-15.1
N	AUTOMATIC DATA PROC	21- 42	38 3/8	- 1/2	-1.2
O	CGA COMPUTER ASSOC	7- 15	14 1/2	0	0.0
O	COMPUTER ASSOC INT'L	8- 31	29	+1 3/4	+6.4
O	COMPUTER HORIZONS	8- 35	30	+ 1/2	+2.0
N	COMPUTER NETWORK	1- 10	8 3/4	3/8	4.3
N	COMPUTER SCIENCES	11- 23	18 7/8	+2 5/8	+15.4
O	COMPUTER TASK GROUP	6- 22	17 1/2	4 3/4	21.3
O	COMPUTER USAGE	7- 22	18 1/4	+1 3/4	+10.6
O	COMPUTONE SYSTEMS	15- 30	20 1/2	+ 3/4	+3.7
O	COMSERV CORP	10- 20	14 1/4	3/4	-5.0
O	COMSHARE	8- 13	13 1/4	1 3/8	10.8
N	CULLINET SOFTWARE	12- 50	48 1/8	+ 7/8	+1.8
O	CYCARE SYSTEMS INC	9- 27	23	+1 1/4	+5.7
O	DATA DIMENSIONS INC	1- 7	3/4	0	0.0
O	DATATAB	0- 2	3/4	0	0.0
O	DYATRON CORP	2- 4	3 1/2	+ 1/8	+3.7
A	ELECTRONIC DATA SYST	10- 45	[illegible]	+2 3/4	+10.0
N	INFORMATICS INC	10- 34	30	+1	3.2
O	INSYTE CORP	1- 3	[illegible]	0	0.0
O	IPS COMPUTER MARKET.	1- 2	1 1/8	0	0.0
O	KEANE ASSOCIATES	4- 13	11	+ 1/4	+2.3
A	LOGICON	17- 44	41 3/4	+ 1/4	+0.6
O	MGMT SCI AMER INC	8- 32	31 1/2	+ 1/2	+1.6
O	MATHEMATICA INC	12- 29	26 3/4	+ 3/4	+2.8
O	MATHEMATICAL APP GRP	12- 22	18 1/4	1/4	-7.1
O	NATIONAL DATA CORP	5- 26	23 1/2	- 3/4	-3.0
O	PANSOPHIC SYSTEMS	8- 27	26 [illegible]	+1 1/8	+4.3
O	PLANNING RESEARCH	6- 21	20	+ 3/4	+3.7
O	POLICY MGMT SYSTS CP	26- 61	60 1/2	+5 1/2	+10.0
O	PROGRAMMING & SYS	1- 8	5 1/4	+ 1/2	+10.5
O	REYNOLDS & REYNOLDS	17- 40	38 3/4	-2	-4.7
O	SEI CORP	11- 34	27	3 1/2	-11.4
O	SHARED MEDICAL SYST	13- 37	35 3/4	- 3/8	-1.0
O	SCIENTIFIC COMPUTERS	8- 14	12 3/4	+ 3/4	+6.2
O	SOFTWARE AG	5- 17	8 7/8	-1 7/8	-17.7
N	TYMSHARE INC	12- 30	27 1/2	0	0.0
O	URS CORP	8- 18	15 7/8	+ 3/8	+2.4
N	WYLY CORP	7- 18	15 7/8	+ 5/8	+4.0
	PERIPHERALS & SUBSYSTEMS				
N	AM INTERNATIONAL	2- 7	5 3/4	- 1/4	-4.1
A	ANDERSON JACOBSON	6- 26	24 1/2	+1 3/4	+3.3
O	AUTO-TROL TECHNOLOGY	8- 21	21 1/8	+3 1/8	+17.3
O	BANCTEC INC	7- 33	13 3/4	-1	-6.7
O	BEEHIVE INT'L	4- 15	13 1/4	+ 1/4	+1.9
N	BOLT, BERANEK & NEW	13- 60	60	+1 1/4	+2.0
O	CAMBEX CORP	2- 4	2 1/4	+ 3/8	+20.0
N	CENTRONICS DATA CORP	6- 23	23	+2 3/8	+12.8
O	CETEC CORP	4- 12	11 5/8	+1 1/4	+12.0
O	COGNITRONICS	2- 14	13	+ 1/2	+4.0
O	COMPUTER COMMUN.	1- 2	1 3/4	+ 1/8	+7.6

E X C H		1982-83 RANGE (1)	CLOSE JUNE 8 1983	WEEK NET CHNGE	WEEK PCT CHNGE
O	COMPUTER DEVICES INC	4- 21	14	+2	+16.6
O	COMPUTER TRANSCEIVER	4- 12	9 1/4	-1 1/2	-13.9
N	COMPUTERVISION CORP	18- 56	46 3/8	0	0.0
N	COMPAC CORP	17- 38	18 3/8	+ 7/8	+5.0
O	DATA ACCESS SYSTEMS	1- 4	5/8	0	0.0
A	DATAPRODUCTS CORP	10- 41	26 1/8	+2 7/8	+11.3
A	DATARAM CORP	5- 12	9 3/8	- 1/8	-1.3
O	DATUM INC	5- 17	10 7/8	+ 7/8	+8.5
O	DAVID JAMISON CARLYLE	2- 7	3 1/2	- 3/8	-9.8
O	DECISION DATA COMPUT	3- 18	13 1/4	-1 5/8	-10.8
A	DELTA DATA SYSTEMS	1- 4	3 1/4	0	0.0
N	ELECTRONIC A & A	5- 11	10 1/2	0	0.0
O	EVANS & SUTHERLAND	16- 50	44 5/8	+5 1/8	+13.0
O	GANDALF TECHNOLOGIES	10- 32	12 1/8	- 7/8	-6.7
A	GEN'L DATA COMM IND	8- 26	22 1/4	-1 3/4	-7.2
O	GENERAL TERMINAL CP	1- 2	3/4	- 3/8	-33.3
O	GREAT [illegible] INC	2- 9	2 1/2	+ 1/4	[illegible]
N	HAZELTINE CORP	7- 30	29 1/4	+2	+7.0
O	ICOT CORP	3- 10	7 3/4	- 1/4	-3.1
O	INFORMATION INTL INC	10- 22	18 1/2	0	0.0
O	INTEL CORP	21- 50	37 1/2	+1 1/2	+2.8
O	IPL SYSTEMS INC	6- 12	11 1/2	+2 1/4	+24.3
A	[illegible] ELECTRONICS	7- 18	17 5/8	+1 1/2	+9.3
A	MAI DATA CORP	14- 36	21 3/8	- 5/8	-2.8
O	NETWORK SYSTEMS CORP	8- 27	24 1/2	+ 1/4	+1.0
O	ONE.	3- 8	7 1/2	0	0.0
O	PARADYNE CORP	20- 30	23 5/8	+ 3/8	+1.6
A	PENRIL CORP	7- 13	11 7/8	+ 3/8	+3.7
O	QANTEL CORP	12- 28	18 3/4	-4 1/4	-17.7
O	RECOGNITION EQUIP	4- 17	14 7/8	+ 1/2	+3.4
O	SCAN DATA	1- 3	1 1/8	0	0.0
N	STORAGE TECHNOLOGY	16- 33	20 1/2	- 3/4	-3.5
O	SYKES DATATRONICS	8- 27	11 1/4	- 5/8	-5.2
A	T BAR INC	7- 14	13	+1	+8.3
O	TEC PRODUCTS CO	8- 28	27 1/4	+ 3/8	+1.3
A	TEC INC	8- 12	8 3/4	0	0.0
N	TEKTRONIX INC	24- 76	78	+2 1/2	+3.4
N	TELEX	5- 27	23 5/8	+2 7/8	+13.8
O	[illegible] SYSTEMS CP	5- 12	11 7/8	+1 1/2	+14.8
N	TIMEPLEX INC	7- 26	29 3/8	+1 3/8	+5.1
O	VISUAL TECHNOLOGY	8- 26	25	+ 1/4	+1.0
O	WILTEK INC	1- 4	2 1/2	+ 1/8	+5.2
	SUPPLIES & ACCESSORIES				
N	AMERICAN BUS PRODS	11- 30	28 1/2	- 1/2	-1.7
O	BALTIMORE BUS FORMS	1- 2	3/4	0	0.0
A	BARRY WRIGHT	13- 27	25 1/4	-1 7/8	-6.8
O	CYBERMATICS INC	1- 1	1 1/4	0	0.0
O	DUPLEX PRODUCTS INC	12- 26	24 1/8	+ 1/4	+1.0
N	ENNIS BUS. FORMS	16- 41	40	+1 1/4	+3.2
N	3M COMPANY	40- 88	84 1/4	-3 3/8	-3.8
O	MOORE CORP LTD	28- 51	48	- 1/4	-0.5
N	NASHUA CORP	9- 22	21 1/2	+ 5/8	+2.9
O	STANDARD REGISTER	11- 34	33 1/2	- 1/4	-0.7
N	WALLACE BUS FORMS	11- 26	26 5/8	+3 1/2	+15.1

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